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TECHNICAL MANUAL

OPERATOR'S MANUAL

FOR

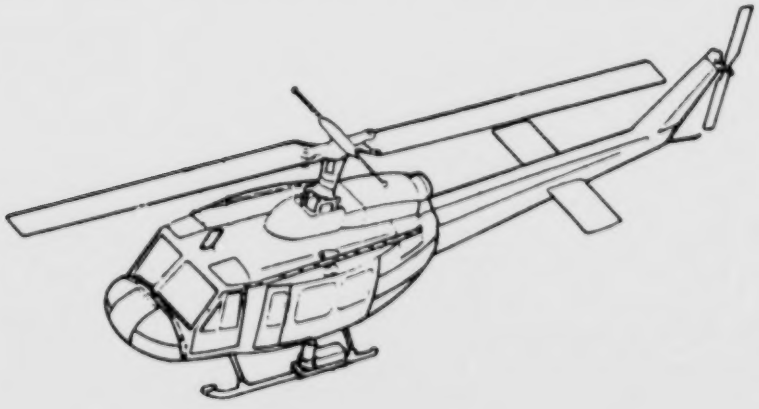
MULTIPLE INTEGRATED LASER ENGAGEMENT SYSTEM (MILES)

SIMULATOR SYSTEM, FIRING, LASER: M79

NSN 1270-01-159-0481

FOR

UH-1H UTILITY HELICOPTER



HEADQUARTERS, DEPARTMENT OF THE ARMY

OCTOBER 1984

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WARNING

Although the laser light emitted by MILES laser transmitters is considered eye safe by the Bureau of Radiological Health, suitable precautions must be taken to avoid possible eye damage from overexposure to this radiated energy. Precautionary measures include the following:

- **Avoid viewing the laser emitter at close range** (less than 12 meters). Increasing the eye-to-laser distance greatly reduces the risks of overexposure.
- **Avoid viewing the laser emitter** directly along the **optical axis** of the radiated beam.
- **Especially avoid viewing the laser emitter through magnifying optics** at engagement ranges of less than **75 meters** for STINGER, VULCAN, and TOW, and **110 meters** for the CHAPARRAL.
- **Avoid allowing personnel** with **optics** of **higher transmission** or **magnifying power than normal tank optics** to view STINGER, Vulcan, or TOW within **150 meters** or the CHAPARRAL within **330 meters**.

Primer is highly inflammable. Do not spray near Heat, Sparks, or Open Flame. No Smoking. Use only in well-ventilated area.

M18 Smoke Canisters are the ONLY canisters authorized for use with the AKI Smoke Assembly. Care should be taken when handling expended canisters as they are initially hot to the touch. Failure to comply may result in Injury to Personnel.

Make sure a grenade is NOT installed in Smoke Indicator.

Do not preflight until all safety switches are set to their SAFE positions.

In inclement weather, shut off AKI strobe to prevent experiencing vertigo during flight. AKI strobe is extinguished with circuit breakers for HEATED BLANKET.

For information on **FIRST AID**, see FM 21-11.

TECHNICAL MANUAL
No. 9-1270-224-10

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D. C.,

19 October 1984

OPERATOR'S MANUAL
FOR
MULTIPLE INTEGRATED LASER ENGAGEMENT SYSTEM
(MILES)
SIMULATOR SYSTEM, FIRING, LASER: M79
NSN 1270-01-159-0481
FOR
UH-1H UTILITY HELICOPTER

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in back of this manual direct to: Commander, US Army Armament, Munitions and Chemical Command, ATTN: DRSMC-MAS(R), Rock Island, IL 61299. A reply will be furnished to you.

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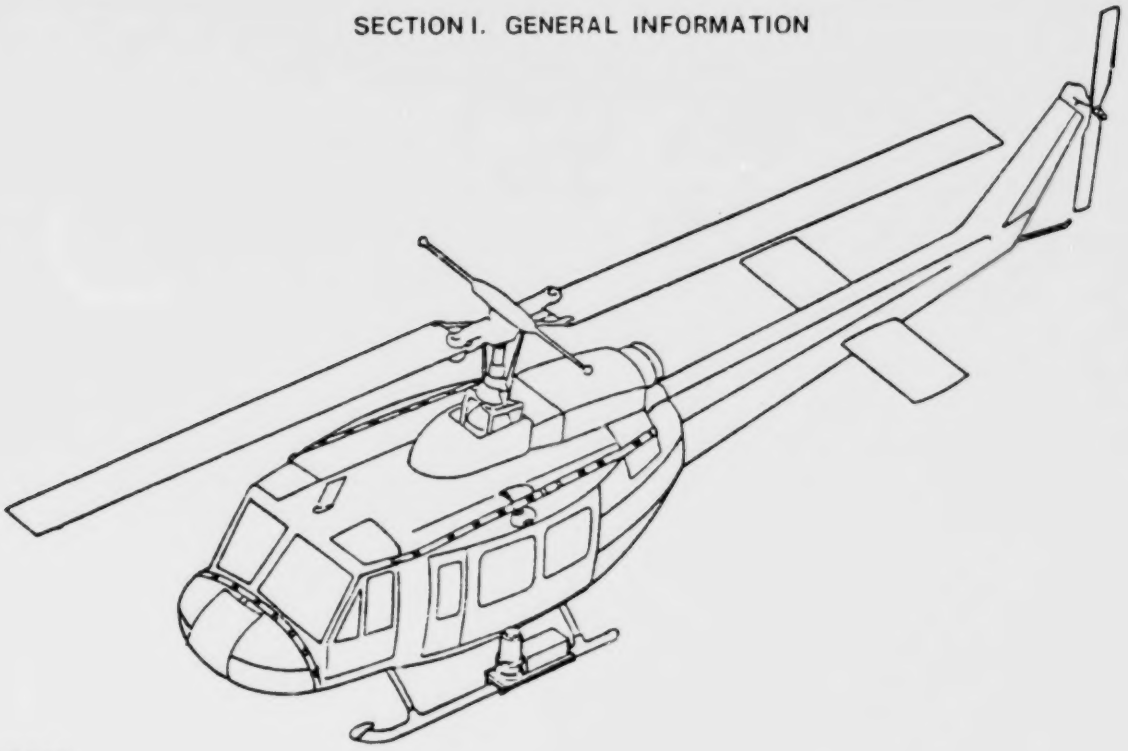
CHAPTER 1

INTRODUCTION

SECTION I. GENERAL INFORMATION



SCOPE

TYPE OF MANUAL. This manual shows you how to install, checkout, align, operate, and maintain the Multiple Integrated Laser Engagement System (MILES) Air-to-Ground Engagement System/Air Defense (AGES/AD) for the UH-1H Utility Helicopter system.

This manual covers only authorized Operator Maintenance. Any maintenance problems not covered should be referred to Organizational Maintenance personnel.

NOTE

To use this manual you should be able to:

Energize and Maintain the UH-1H Utility Helicopter (see TM 55-1520-210-10) and the M60 machine gun (see TM 9-1005-224-10).

Complete DA Form 2402 and 2404.

If you cannot do these tasks, ask your NCOIC or Instructor to show you how. When you can do all these tasks, go on with this manual.

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PURPOSE OF EQUIPMENT. MILES AGES/AD equipment for the UH-1H Utility Helicopter consists of a Laser Detector and Warning system. It permits realistic combat training without the hazards of using live ammunition.

LIMITATION ON EQUIPMENT. Miles-equipped weapons have the same range and operational capabilities as the normal weapons, but a dirty laser transmitter lens may reduce the effective range of the transmitters.

MAINTENANCE FORMS AND RECORDS. Department of the Army forms and procedures used for equipment maintenance are those as prescribed in DA PAM 738-750, The Army Maintenance Management System (TAMMS).

HAND RECEIPT MANUAL. This manual has a companion document with a TM number followed by "-HR" (which stands for Hand Receipt). The TM 9-1270-224-10-HR consists of preprinted hand receipts (DA Form 2062) that list end item related equipment (i.e., COEI, BII and AAL) you must account for. As an aid to property accountability, additional -HR manuals may be requisitioned from the following source in accordance with procedures in Chapter 3, AR 310-2:

Commander
The U. S. Army Adjutant General Publications Center
2800 Eastern Boulevard
Baltimore, MD 21220

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIRS). If your MILES equipment for the UH-1H Utility Helicopter needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Quality Deficiency Report). Mail the Quality Deficiency Report to us at Commander, U. S. Army Armament, Munitions and Chemical Command, ATTN: DRSMC-MAO(R), Rock Island, IL 61299. We'll send you a reply.

REFERENCE INFORMATION

Nomenclature Cross Reference List

Common Name	Official Nomenclature
Adapter Set	Adapter Set, Simulator System, Laser: UH-1H Helicopter
Aircraft Control Indicator	Adapter Assembly, Simulator System, Laser: Console
Aircraft Kill Indicator (AKI)	Indicator, Simulator System, Laser: Aircraft Kill
Battery Box	Battery Box Assembly
Cockpit Kill Indicator (CKI)	Adapter Assembly, Cockpit Kill Indicator
Detector Belt	Detector Belt Assembly, Aircraft Segments No. 2, 3, and 4
M60 Transmitter	Transmitter Assembly, Simulator System, Laser: For M60 Machine Gun
Smoke Indicator	Indicator Simulator System, Laser: Smoke
UH-1H Simulator	Simulator System, Firing Laser: M79 for UH-1H Helicopter

List of Abbreviations

AGES/AD	Air-to-Ground Engagement System/Air Defense
ACIA	Aircraft Control Indicator Assembly
AKI	Aircraft Kill Indicator
CKI	Cockpit Kill Indicator
IR	Infrared
MILES	Multiple Integrated Laser Engagement System
PMCS	Preventive Maintenance Checks and Services

Glossary

Aircraft Control Indicator Assembly (ACIA)	Receives detected laser pulse signals from externally-mounted detector belts. Decodes these signals and activates appropriate audio and visual alarms associated with the AKI/Smoke Assembly and intercom. Displays information on attacking weaponry.
Aircraft Kill Indicator (AKI)	Provides external flashing signal light which indicates that helicopter is under opposing fire ("NEAR MISS"), has been "HIT" or "KILLED." Attaches to left skid.

Glossary (Continued)

Cockpit Kill Indicator (CKI)	Contains electronic circuitry that actuates AKI and intercom warning signals. Also contains a key receptacle for testing and activating system for an emergency system OFF switch. Located in cockpit.
Controller	Umpire or referer in a MILES training exercise.
Controller Gun	Device used to test MILES Detector Systems. Also used to disqualify soldiers or UH-1H.
Controller Key	Green Key used by Controller to reset MILES transmitters and control console.
Detector Belt	Device that senses laser beams directed at it.
Fastener Tape	Hook and pile tape, used to hold vehicle detector belts and other MILES equpiment in place.
HIT	Simulated contact with opposing fire insufficient to disable vehicle or cause a fatality.
KILL	Simulated contact with opposing fire sufficient to disable vehicle or cause a fatality.
Laser	Light Amplification by Stimulated Emission of Radiation.
Laser Beam	Invisible beam of light which simulates weapon fire.
Laser Detector Assembly	Device that senses laser beams directed at it.
Laser Transmitter	Device that sends a laser beam.
NEAR MISS	Simulated closeness to contact with opposing fire.
Simulator	Training device which takes the place of real equipment and which has many of its characteristics.
Smoke Indicator	Contains a smoke grenade that is ignited when the UH-1H has been "KILLED." Attaches to left skid adjacent to the AKI.

SECTION II. EQUIPMENT DESCRIPTION

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

PURPOSE OF MILES SIMULATOR SYSTEM, LASER: UH-1H UTILITY HELICOPTER

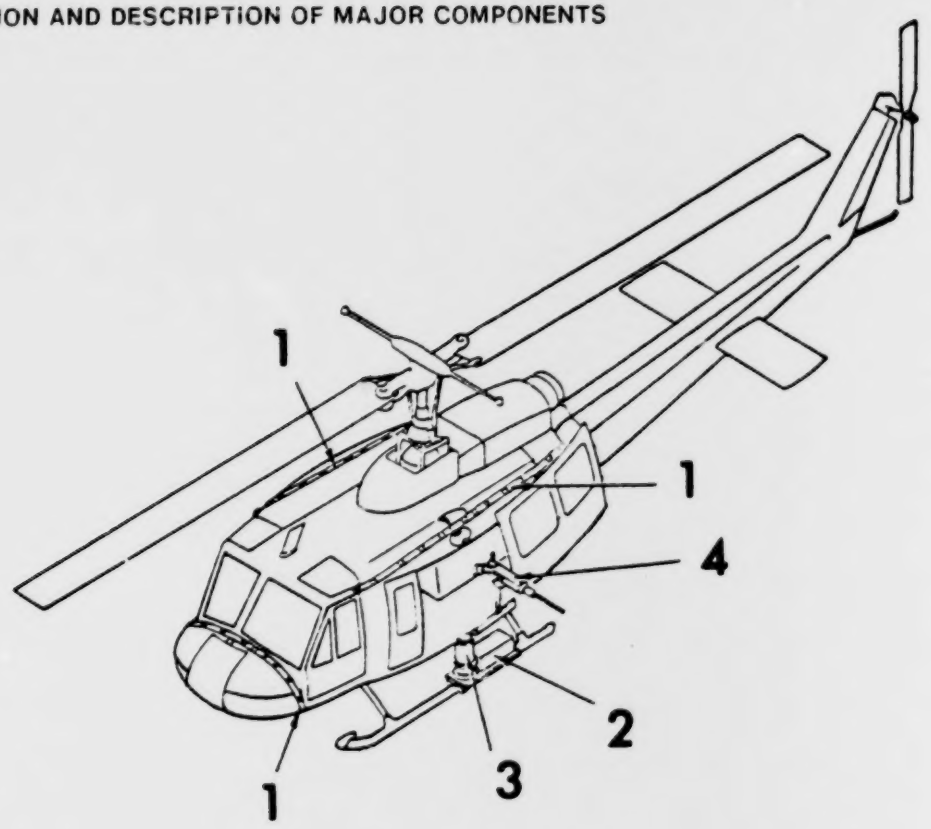
The MILES Simulator System, Laser: UH-1H Utility Helicopter, permits the helicopter and aircrew to take part in realistic combat training exercises.

Laser detectors mounted on the helicopter exterior sense enemy fire. MILES system electronics determines the accuracy and simulated damage of enemy fire. The system also detects the type of weapon directing enemy fire against the UH-1H. A Smoke Indicator Device adds to the system's realism.

FEATURES AND CAPABILITIES

- Easily installed and removed.
- Smoke indicator device adds realism.
- Detects all opposing fire.
    1. Attacking weapon accuracy
        a. "NEAR MISS"
        b. "HIT"
        c. "KILL"
    2. Attacking weapon identification
- Uses eye safe battery-powered laser transmitters.
- Operates in temperatures from -35°C (-31°F) to 62°C (144°F).
- Compatible with all other MILES training devices.
- High visibility CVKI strobe light signals vehicle "NEAR MISS", "HIT" or "KILL."

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

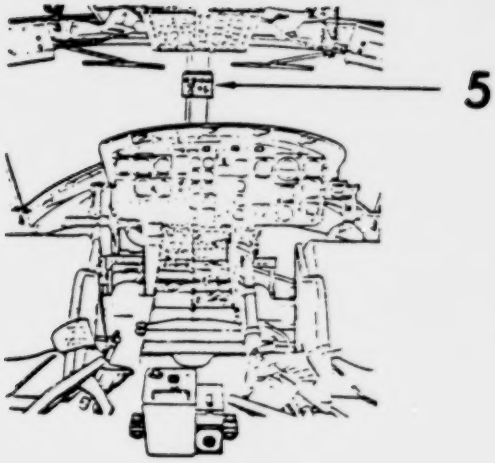


Detection Belt System **(1)**. Receives laser pulses from AGES/AD and MILES-equipped opposing weapons. Generates, amplifies and routes electrical signals to Aircraft Control Indicator Assembly (ACIA) for determining whether signal was a "NEAR MISS," "HIT" or "KILL". Mount on sides, top, bottom and nose of UH-1H fuselage.

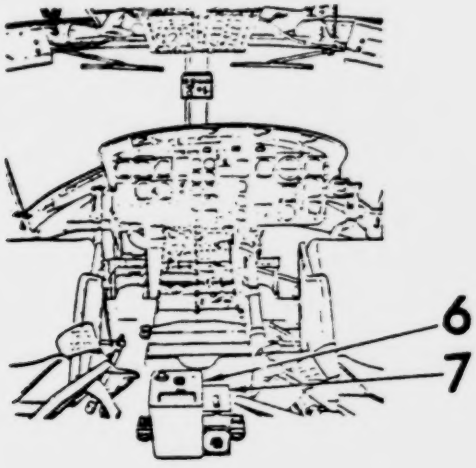
Smoke Indicator **(2)**. Contains a smoke grenade that is ignited when the UH-1H has been "KILLED." Mounts on the left skid adjacent to Aircraft Kill Indicator (AKI). Operates on 28 V dc aircraft power.

Aircraft Kill Indicator [AKI] **(3)**. Provides a flashing light to indicate to other aircraft, vehicles, and ground troops that the UH-1H has received a "NEAR MISS", "HIT" or "KILL." The AKI bolts to the left skid, and operates on 28 V dc aircraft power.

M60 Laser Transmitter **(4)**. Simulates the firing of the M60 Machine Guns by transmitting a special coded laser signal each time a blank round is fired. Clamps on machine gun barrel. Mounts only on UH-1H helicopter equipped with M60 machine guns. Transmitter is a separately issued item and not part of the MILES/UH-1H system.



Cockpit Kill Indicator [CKI] (5). Contains lights to indicate "ENGAGE" or "KILL," a system ON/OFF switch, volume control for adjusting tone in intercom, receptacle to accept Controller's Reset Key and a switch to dim indicator lights. Mounts on cockpit windshield frame.



Aircraft Control Indicator Assembly [ACIA] (6). Receives laser pulse signals from detector belts. Decodes these signals, and actuates appropriate audio and visual alarms. Has key receptacle for initializing and resetting system. In case of a "HIT" or "KILL", displays a number that identifies attacking weapon type. Mounts behind helicopter's center console.

Battery Box (7). Contains two 6 V batteries for operating the CKI, ACIA, detection system, and AKI. Mounts against ACIA.

EQUIPMENT DATA

Table 1-1. MILES UH-1H Helicopter Technical Characteristics

Item	System Requirements
Power	12 V dc (ACIA and detection system) 28 V dc (AKI)
Reset/Initialization	Controller Key

Table 1-2. MILES UH-1H Helicopter Major Components Weights and Dimensions

Item	Weight (pounds)	Dimensions (inches)	Number of Detectors
ACIA, Battery Box and Battery	15.7	8 x 5 x 5.5	
AKI/Smoke	23	21 x 12 x 7	
CKI	2	4 x 4 x 3	
Detector Belt Segment (No. 2)	4.7	139 x 2 (approx.)	8
Detector Belt Segment (No. 3)	3.8	137 x 2 (approx.)	8
Detector belt Segment (No. 4)	3.6	180 x 2 (approx.)	6

Table 1-3. MILES UH-1H Helicopter System Information for Weights and Balances

MILES AGES/AD Equipment	Weight (Pounds)	MOM X 100
Top Right Detector Belt #3	3.8	4.7
Bottom Right Detector Belt #2	4.7	5.9
Top Left Detector Belt #3	3.8	4.7
Bottom Left Detector Belt #2	4.7	5.9
Nose Detector Belt #4	3.6	.7
CKI	2	.6
ACIA and Battery Box and Battery	15.7	11.6
Cables	10	7.4
AKI/Smoke	23	34.5
Totals	71.3	76

SECTION III. TECHNICAL PRINCIPLES OF OPERATION

BASIC PRINCIPLES OF OPERATION

The MILES system uses semiconductor laser beams to simulate actual weapon fire. An eye-safe invisible laser beam is sent out by each weapon's transmitter when it is fired. The laser beam is coded and simulates all of the weapon's capabilities including range, accuracy and destructive capability.

Laser detection systems are used to sense opposing fire. The detection systems detect opposing laser beams and determine whether they have scored a "NEAR MISS", "HIT" or "KILL." The systems activate alarms indicating the presence and damage of opposing fire.

The MILES system of laser beam transmitters and detectors allows safe realistic training exercises with a complete range of weaponry and vehicles.

UH-1H HELICOPTER CONFIGURATION

The UH-1H helicopter exterior has special detector belts attached that sense opposing fire. An Aircraft Control Indicator Assembly (ACIA) mounted inside the helicopter determines the extent of fire and its effect. An Aircrart Kill Indicator (AKI) mounted on the helicopter's left skid is activated by the ACIA when opposing fire is detected. A Smoke indicator is actuated when the opposing fire scores a "KILL."

UH-1H helicopters equipped with M60 machine guns can utilize a separately issued MILES laser transmitter that simulates the firing range, accuracy and power of that gun. This equipment is compatible with but separately issued from the MILES UH-1H system.

HELICOPTER DETECTION SYSTEM

Five detector belt segments containing 38 detectors are mounted on the nose, sides, top and bottom of the UH-1H fuselage. Opposing fire is sensed by the detectors. They generate electrical signals that are routed to a decoder in the ACIA.

The decoder identifies the type of weapon that fired the opposing laser beam. It determines whether the laser shot was accurate enough to cause an "ENGAGE" situation. An "ENGAGE" lamp on the Cockpit Kill Indicator (CKI) is lit for either a "HIT" or "NEAR MISS."

The decoder determines if the weapon was capable of causing damage to the target, (an M16 rifle, for example, cannot disable a tank) and the probability of "KILL" for that weapon. The probability of "KILLING" a target is different for each attacking weapon. A "KILL" lamp on the CKI is lit for a "KILL."

If a detector on the UH-1H is "HIT" by laser fire, one of three things will happen:

1. Two tones will sound in the helicopter's intercom and AKI light mounted on the left skid will flash two times. The CKI "ENGAGE" lamp will light. This means a "NEAR MISS" occurred.

2. Four to six tones will sound in the intercom and AKI light will flash four or six times. The CKI "ENGAGE" lamp will light. This means a "HIT" but not a "KILL" occurred.

3. The intercom tone will sound continuously and AKI light will flash continuously. An M18 smoke grenade located in the smoke indicator assembly mounted on the left skid will be set off. The CKI "KILL" lamp will light. This means a "KILL" occurred.

The helicopter crew can determine what type of weapon has fired on them by setting the switch on the MILES Aircraft Control Indicator Assembly (ACIA) to HIT/KILL and pressing the PRESS TO READ button. A code number indicating the attacking weapon will appear on the display following a "HIT" or "KILL." No code number appears for a "NEAR MISS."

The intercom tone may be silenced by turning the VOLUME knob on the CKI. The AKI light continues to flash until reset by a Controller.

CHAPTER 2

OPERATING INSTRUCTIONS

SCOPE. This Chapter provides those instructions needed by the Aircraft Crew to install, test. operate, and remove the MILES UH-1H equipment.

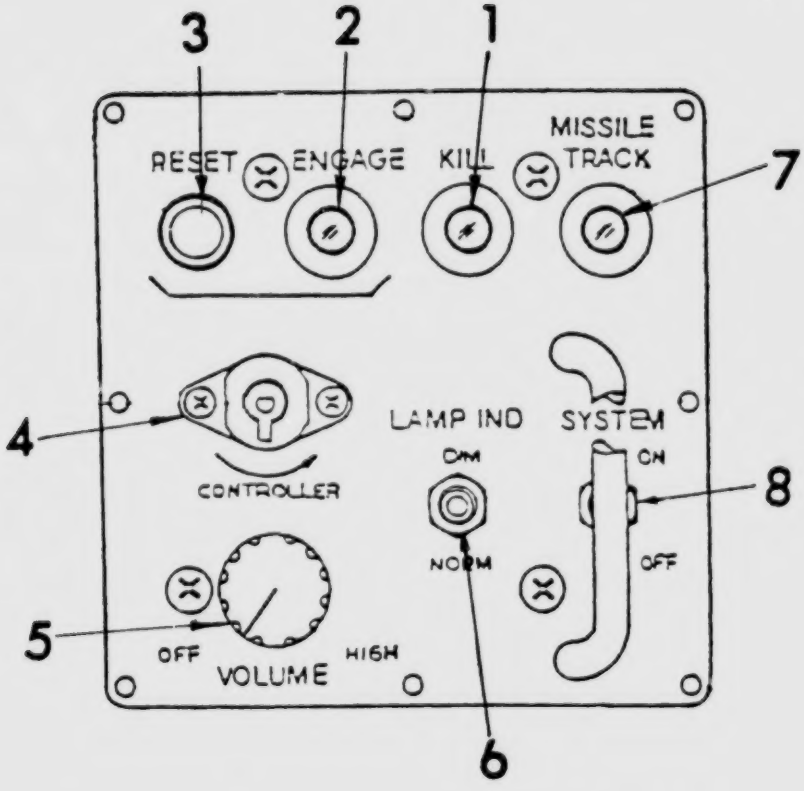
SECTION I. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

MILES UH-1H CONTROLS AND INDICATORS. The MILES UH-1H Controls and Indicators are only those associated with the Aircraft Control Indicator Assembly (ACIA) and Cockpit Kill Indicator Assembly (CKI). All other Controls and Indicators are those actually associated with the UH-1H Utility Helicopter.

COCKPIT KILL INDICATOR (CKI) CONTROLS AND INDICATORS. Controls and Indicators for the CKI are listed in Table 2-1.

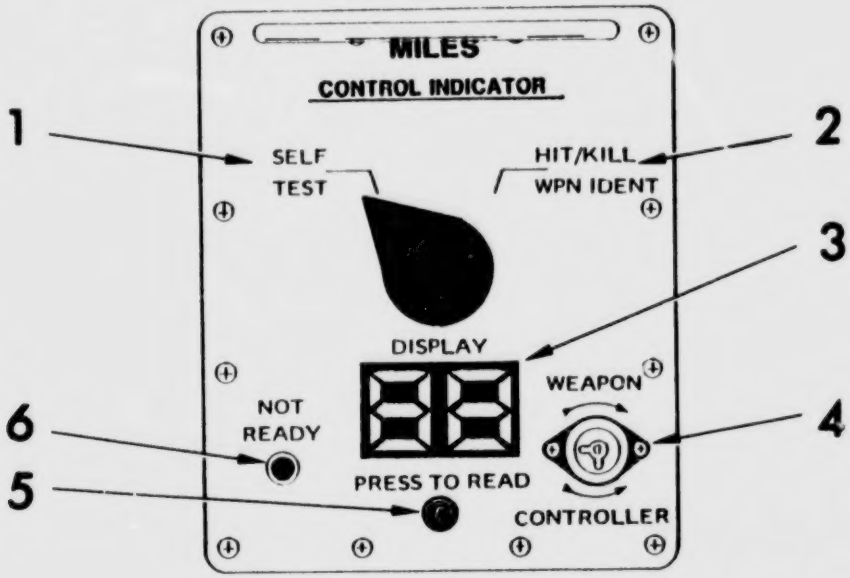
Table 2-1. Cockpit Kill Indicator Controls and Indicators

Key	Description	Function	Operating Position
1	KILL	Lights blue when detection system receives a "KILL".	Adjustable iris normally open. DIM when using night vision goggles.
2	ENGAGE	Lights amber when detection system receives a "HIT" or "NEAR MISS."	Adjustable iris normally open. DIM when using night vision goggles.
3	RESET	Resets ENGAGE light.	
4	CONTROLLER	Resets/Initializes system.	Controller.key to CONTROLLER resets system.
5	VOLUME	Adjusts loudness of MILES tone in intercom.	As required.
6	LAMP IND	Changes brightness of CKI lamps.	NORM - during daylight operations. DIM - during night operations.
7	MISSILE TRACK	Not used.	
8	SYSTEM	Turns MILES system off in case of emergency.	ON



CKI Controls and Indicators

AIRCRAFT CONTROL INDICATOR ASSEMBLY (ACIA) CONTROLS AND INDICATORS. Controls and indicators for the ACIA are listed in Table 2-2.



ACIA Controls and Indicators

Table 2-2. Aircraft Control Indicator Assembly Controls and Indicators

Key	Description	Function	Operating Position
1	SELF TEST	Performs Self Test.	Turn to SELF TEST. Press PRESS TO READ. Display should read **88**.
2	HIT/KILL WPN IDENT	Identifies weapon firing on you.	Turn to HIT/KILL. Press PRESS TO READ. Display will show a number.
3	DISPLAY	Displays numbers.	
4	WEAPON CONTROLLER	Resets system.	Turn controller key to CONTROLLER position to reset system. (Performed only by Controller.)
5	PRESS TO READ	Activates display.	Press to activate display.
6	NOT READY	Lights when not ready or "KILLED."	

SECTION II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

GENERAL. Preventive Maintenance Checks and Services will ensure that the MILES equipment will always be ready for operation and perform satisfactorily throughout its mission. Preventive maintenance checks consist of performing a systematic inspection to discover defects before they result in operational failure of the equipment. Defects or malfunctions discovered by the crew during use of the MILES equipment, or as a result of performing maintenance checks and services, will be reported using the proper forms (refer to DA PAM 738-750).

(1) Before you operate. Always keep in mind the CAUTIONS and WARNINGS. Perform your Before (B) PMCS.

(2) While you operate. Always keep in mind the CAUTIONS and WARNINGS. Perform your During (D) PMCS.

(3) After you operate. Be sure to perform your After (A) PMCS.

(4) If your equipment fails to operate, troubleshoot with proper equipment. Ask your Controller to check your equipment.

Report any deficiencies using the proper forms.

Table 2-3. Operator/Crew Preventive Maintenance Checks and Services

B - Before Operation D - During Operation A - After Operation W - Weekly Operation M - Monthly Operation

Item No.	Interval					Item to be Inspected	Procedures - Check for and have repaired or adjusted as necessary	Equipment Is Not Ready/ Available If:
	B	D	A	W	M			
1	•					Batteries	Inspect for acid leaks.	Acid to present.
2	•					Battery Box	Inspect for damaged connectors. Check that connectors and interior battery contacts are serviceable.	Damage would prevent normal operation.
3	•					Cable Assemblies (6)	Check for broken connectors and cut, worn or bare wiring.	Connectors are broken or wire is cut or bare.
4	•					ACIA	Inspect for cracks in Display Window.	Display Window is cracked.
							Check that Controller's key turns freely in MODE SELECT receptacle.	Controller's key does not turn freely.
							Inspect for evidence of switch damage.	Switch is damaged.
5	•		•			Detector Belt Segments (5)	Look for loose or cracked detector, or damaged connectors.	Detectors are loose or cracked; connectors are damaged.
6	•					AKI/Smoke	Inspect for cracks in plastic lens.	Lens is cracked.
							Inspect for damaged receptacle.	Receptacle is damaged.
							Inspect for stripped mounting bracket threads.	AKI cannot be securely mounted.
							Inspect for damaged hinge and latch.	Hinge binds or latch will not engage.
7	•		•				Inspect for presence of grenade.	Grenade is present.

B - Before Operation	D - During Operation	A - After Operation	W - Weekly Operation	M - Monthly Operation

Item No.	Interval					Item to be Inspected	Procedures - Check for and have repaired or adjusted as necessary	Equipment Is Not Ready/ Available If:
	B	D	A	W	M			
7	•					CKI	Inspect for evidence of switch damage.	Switch is damaged.
							Inspect lamps for proper operation.	Lamps operate incorrectly.
							(If lamps fail to illuminate, unscrew Iris Assembly, clean unit out, and retest.)	
							Check that Controller Key turns freely in key receptacle.	Controller Key does not turn freely.

SECTION III. OPERATION UNDER USUAL CONDITIONS

GENERAL. Before the MILES equipment can be used, it must be properly installed on the UH-1H. To speed up procedures, work is organized into various tasks. While some crew members are performing one set of tasks, others can be performing another set.

Before you begin, **READ ALL STEPS IN THE TASK AND LOOK AT EACH ILLUSTRATION CAREFULLY.** To help perform a task, most steps have reference numbers to illustrations. Do each step just the way you are instructed and in the order in which it occurs in this manual.

NOTE

Don't jump ahead. Don't skip any steps.

If your MILES equipment has a problem you can't fix using this manual, report it on DA Form 2404. To get a replacement, turn in the faulty equipment and the completed form.

TASK ASSIGNMENT. The Crew Chief assigns crewmen to tasks. The crewman turns to the appropriate Section in this manual and performs the required steps IN ORDER. Occasionally, the manual may tell a crewman to wait until he has made sure that another crewman has completed an earlier task. On some tasks, two crewmen may have to work together.

START AT TASK 1 AFTER READING THE TASK ASSIGNMENT.

Certain steps must be done with the Controller present. A Controller Key, carried only by the Controller, is required to reset the system. The Crew Chief will determine when to call the Controller.

Those tasks involving the Controller must be done in this order.

1. Test Tasks (See page 2-76)
2. Operational Tasks 2 (Initialize MILES System), 4 (Install Smoke Grenade), 7 (Recognizing Enemy Fire), and 8 (Resetting System After a "KILL") (See pages 2-85, 2-87, 2-89, 2-91)

The Crew Chief should coordinate the tasks, give assistance to any crewman who needs it, and check to make sure everything gets done.

NOTE

Unless otherwise indicated, references in this manual to right and left sides of the UH-1H Utility Helicoper use the seated Pilot as a standard point of reference.

LIST OF TASKS

Tasks	Page
Assembly and Preparation for Use	
Preinstallation Task	2-9
Outside Installation Tasks	2-10
Inside Installation Tasks	2-62
Initial Adjustments, Daily Checks and Self Test	
Alignment Task	2-75
Test Tasks	2-76
Operating Procedure	
Operational Tasks	2-81
Postoperational Tasks	2-93

NOTE

Minimum vehicle temperature for cleaning and priming is approximately 32°F.

ASSEMBLY AND PREPARATION FOR USE

Preinstallation Task: Obtain Equipment.

Obtain all equipment needed to install and operate MILES UH-1H Utility Helicopter system from your NCOIC. Unpack transit case. Verify that all equipment is present and not visibly damaged. Check against illustrations in Appendix B, Components of End Item and Basic Issue Item List.

Obtain all Support Equipment (Appendix C) and all Expendable/Durable Supplies and Materials (Appendix D).

OUTSIDE INSTALLATION TASKS - LIST

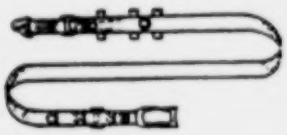
Task	Title	Page
1.	Obtain Equipment	2-11
2.	Inspect and Install Aircraft Shackles	2-14
3.	Inspect and Service Detector Belt Segments	2-15
4.	Install Top Left Detector Belt	2-16
5.	Install Bottom Left Detector Belt	2-25
6.	Install Front Detector Belt	2-31
7.	Install Top Right Detector Belt	2-36
8.	Install Bottom Right Detector Belt	2-45
9.	Inspect AKI/Smoke Indicator Assembly	2-51
10.	Install AKI/Smoke Indicator Assembly	2-52
11.	Inspect Outside Cable Assemblies	2-53
12.	Install Left Side Cable Assembly	2-54
13.	Install Nose Belt Cable Assembly	2-58
14.	Install AKI/Smoke Cable Assembly	2-59
15.	Install Right Side Cable Assembly	2-60

NOTE

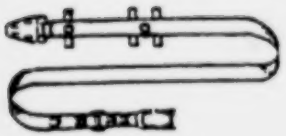
Some tasks may require the replacement of aircraft screws with MILES supplied screws. Do not lose the helicopter screws. They must be replaced upon removal of the MILES equipment.

Outside Installation Task 1: Obtain Equipment. Completion of outside installation tasks requires equipment listed and illustrated below. Locate and set aside this equipment.

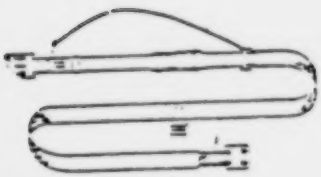
2 Detector Belt Segments No. 2



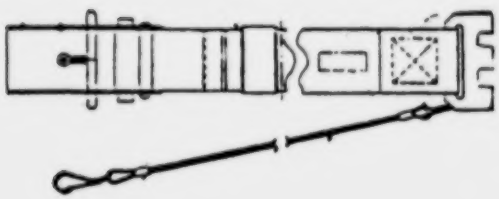
2 Detector Belt Segments No. 3



1 Detector Belt Segment No. 4



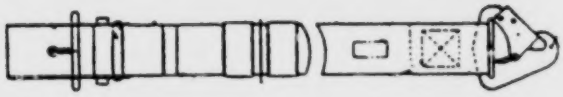
2 Belt End Assemblies



1 Belt End Assembly

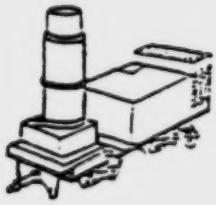
Outside Installation Task 1: Obtain Equipment (Cont)

2 Belt End Assemblies



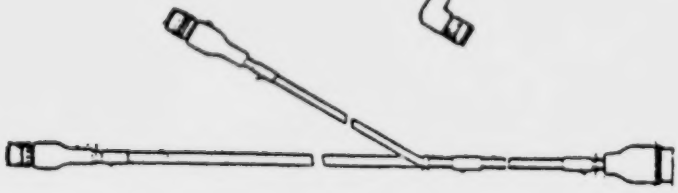
1 Installation Kit - 1 can of Primer and 1 roll of Fastener Tape (For resupply of either item, see Appendix D)

1 AKI/Smoke Indicator Assembly

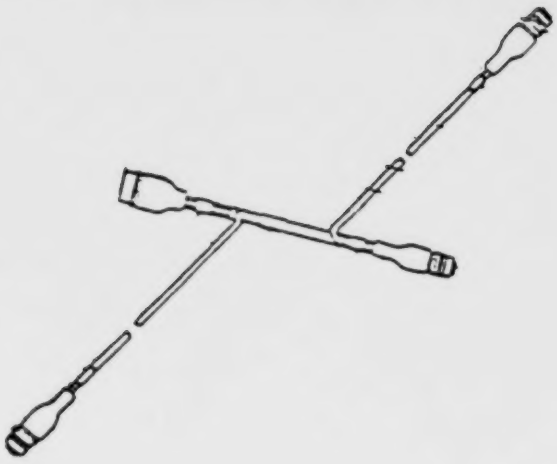


1 AKI/Smoke-ACIA Cable Assembly (W2)

1 Belt Harness Right Cable Assembly (W4)



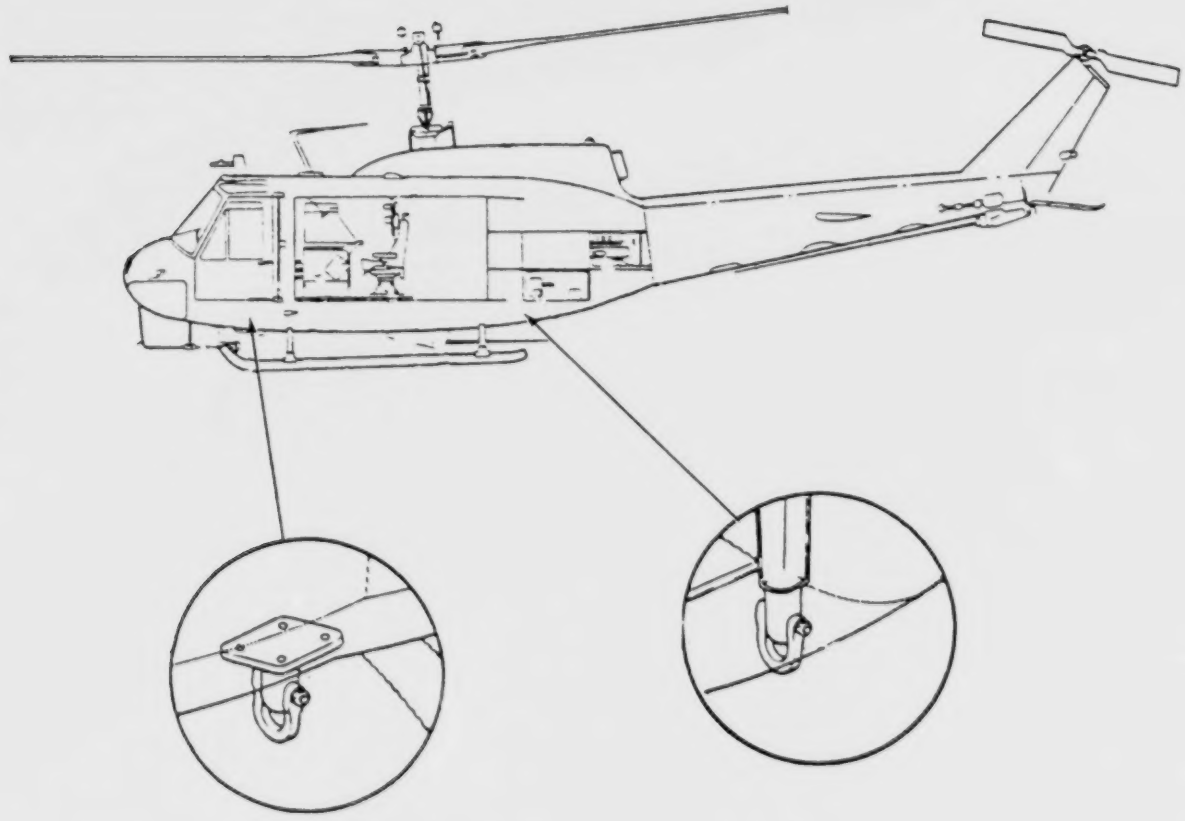
1 Belt Harness Left Cable Assembly (W5)



1 Cable Loop Clamp

4 MILES Pan Head Screws

Outside Installation Task 2: Inspect and Install Aircraft Shackles.



Shackles must be installed on rear hard points and forward ground handling rings to accommodate MILES equipment. Inspect aircraft and ensure four shackles are installed and are not cracked or damaged. Install shackles where necessary.

Outside Installation Task 3: Inspect and Service Detector Belt Segments. All five detector belt segments must be checked.

Look for any damage that would prevent normal operation of the belt segments (1).

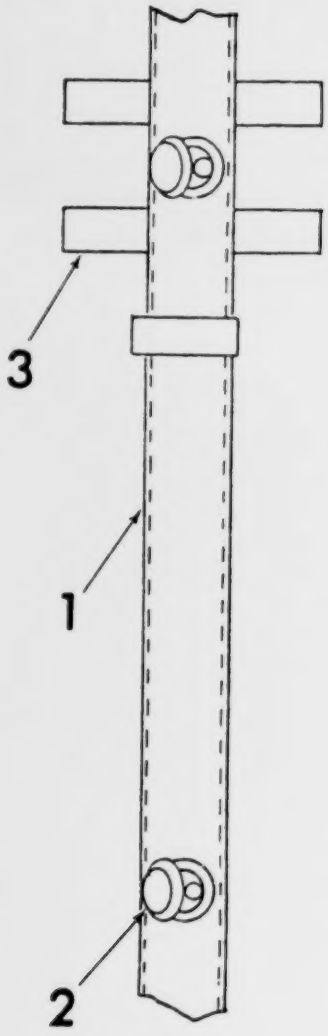
Wipe detectors (2) clean. (Clean all detectors.)

Unfasten and spread out all fastener tabs (3).

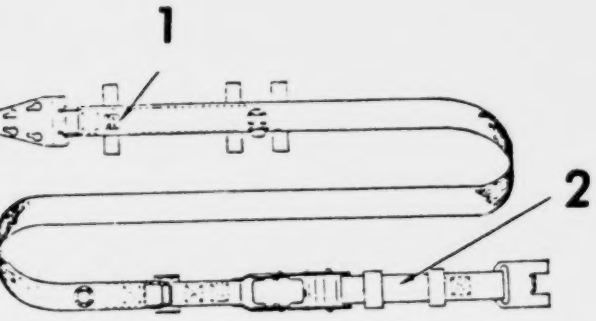
Report any damage on DA Form 2404.

NOTE

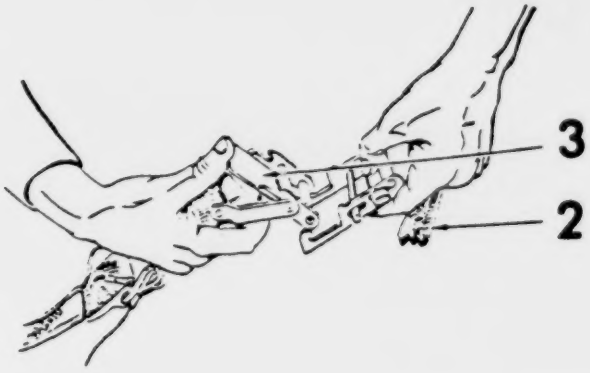
Replace belt segments only if not usable.



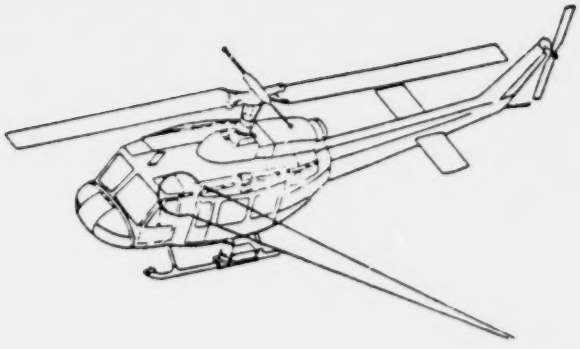
Outside Installation Task 4: Install Top Left Detector Belt. The top left detector belt is installed on the left side of the fuselage above the cabin windows. The belt begins just to the rear of the copilot's access door and runs to the end of the engine access cover.



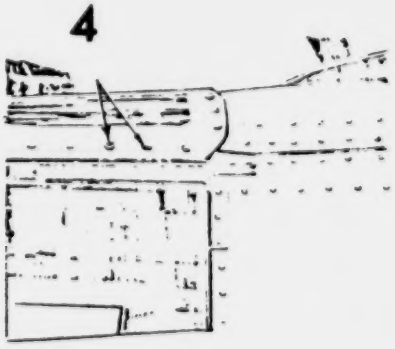
Locate a detector belt labeled Aircraft Segment No. 3 (1).



Locate a belt end assembly part number 9340083 (2) (there are two of them). Attach it to detector belt. Close and latch buckle (3).



Remove lower second and third screws from rear on window frame above copilot's door (4). Use No. 2 Phillips screwdriver from vehicle tool kit. Store screws for replacement following MILES exercises.

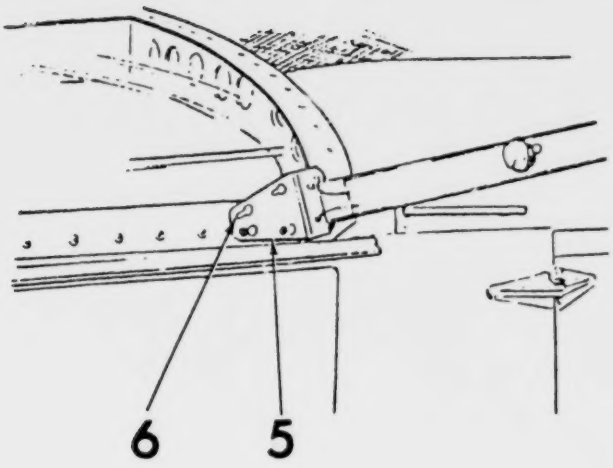


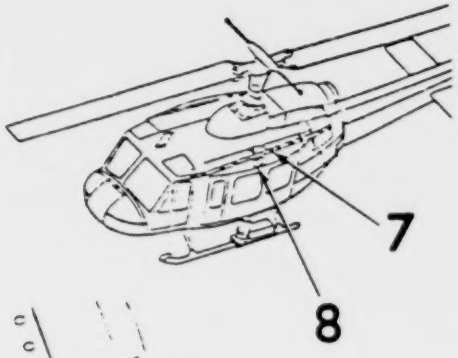
Install two MILES supplied pan head screws in empty window frame holes. Do not tighten.

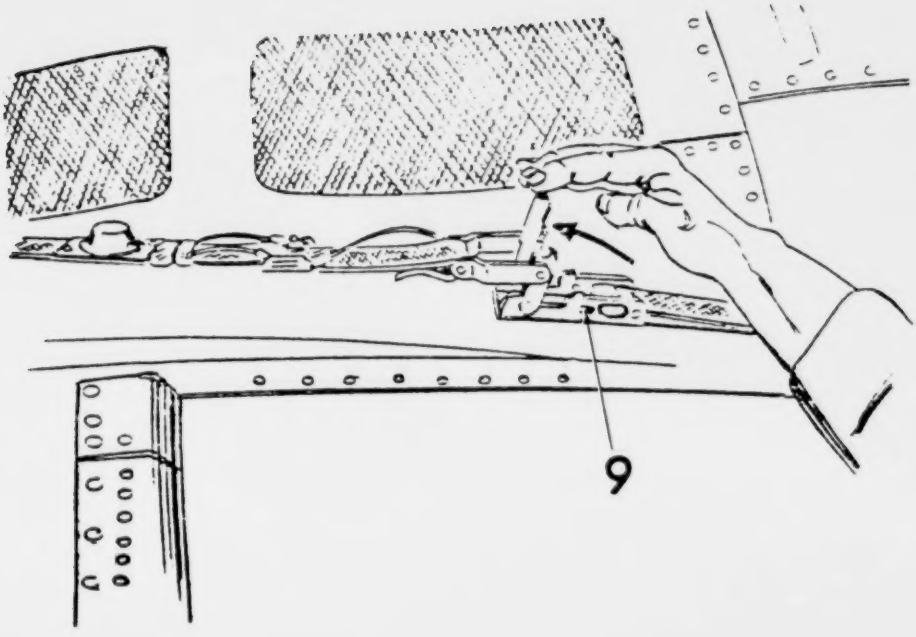
Slide two lower holes on belt end plate (5) over screw heads. Pull plate aft until screws reach the back of slot (6). Tighten screws securely.

Pull detector belt out along top of fuselage between air scoop (7) and navigation light fairings (8).

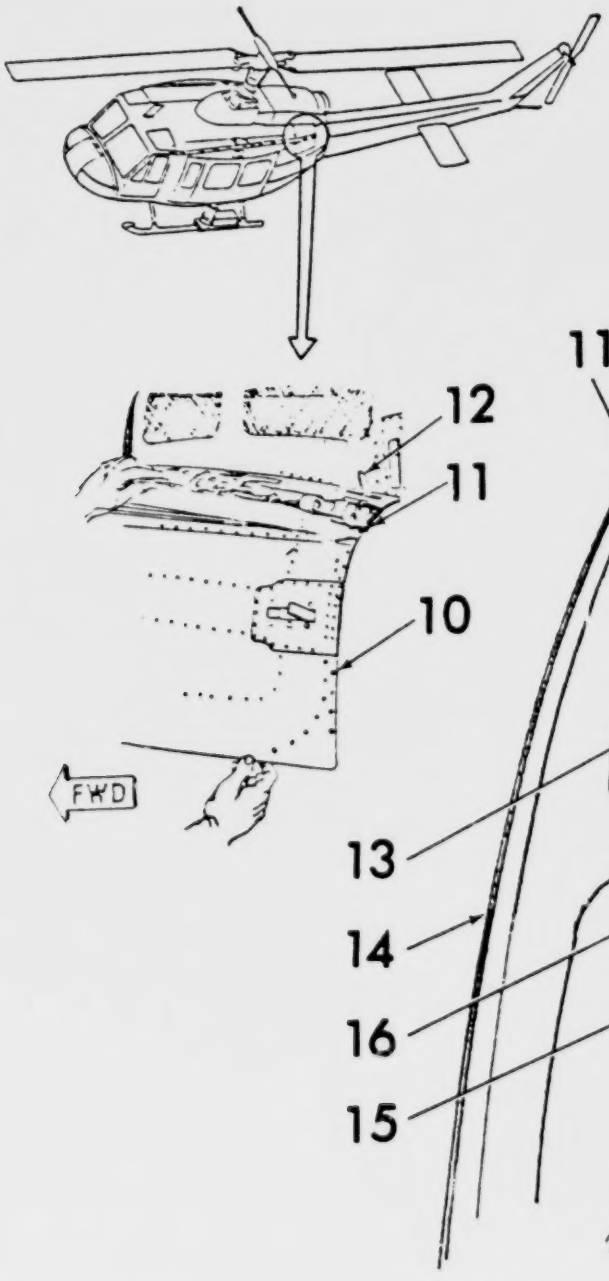
Unlatch buckle (9).





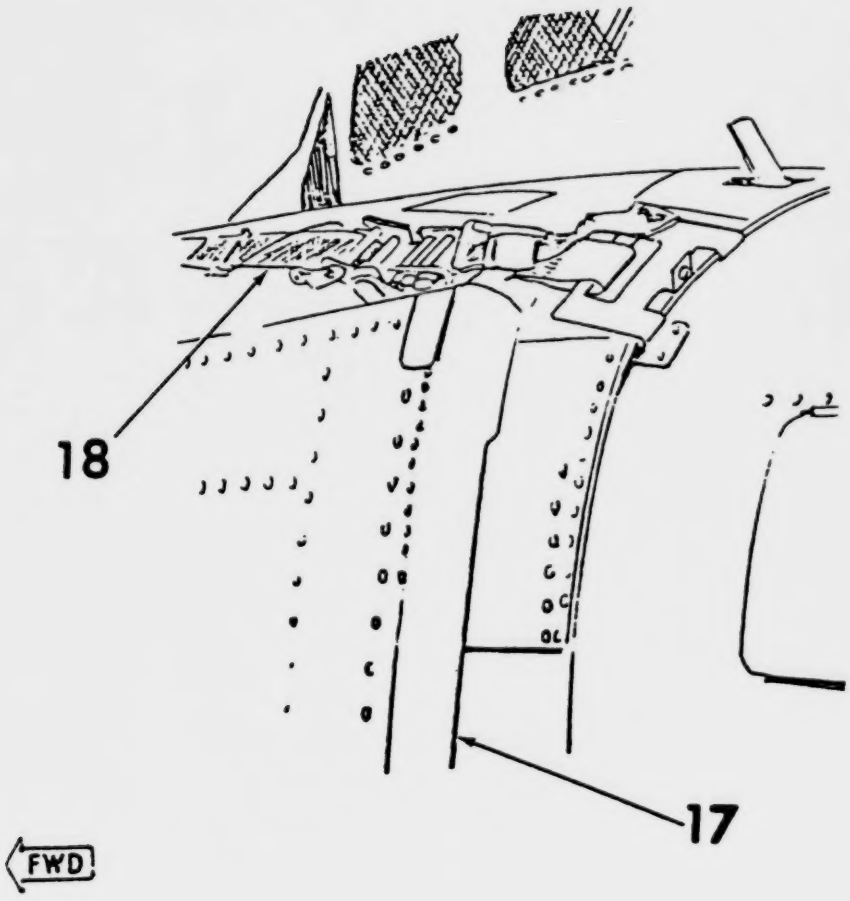


Outside Installation Task 4: Install Top Left Detector Belt (Cont).



Open engine cowling (10). Hook rear belt clamp (11) over rear edge of door. Position clamp just below cowling's upper latch (12).

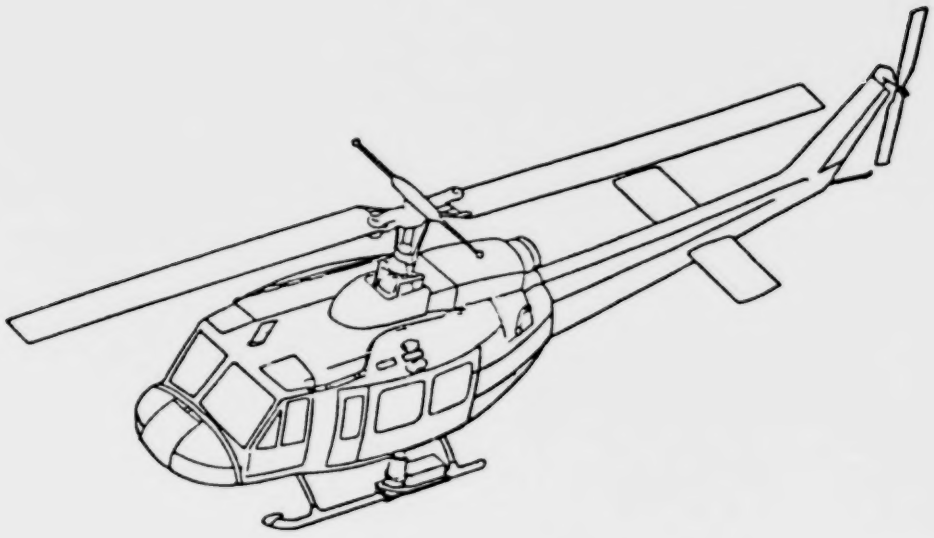
Route safety lanyard (13) behind rear of engine access door (14). Wrap lanyard around the door hinge support (15). Secure with the lanyard clamp hook (16) to lanyard cable. Secure engine cowling. Position lanyard to prevent difficulty in opening and closing cargo door.



Slide open cargo door (17) and verify that door clears detector belt (18). If not, slide detector belt clamp up until door clears.

Ensure that engine cowling is securely latched.

Outside Installation Task 4: Install Top Left Detector Belt (Cont).



WARNING

Primer is highly inflammable. Do not spray near Heat, Sparks, or Open Flame. No Smoking. Use only in well-ventilated area.

Fastener tape must be applied to the left fuselage side in two places:

Under the third detector from the front of the belt.

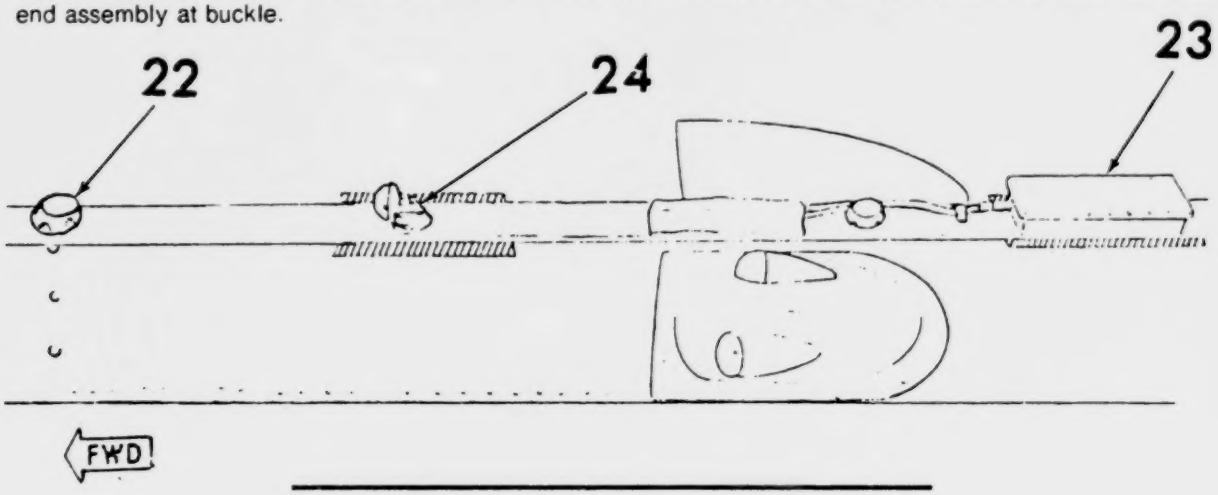
Under the detector belt electronics box.

NOTE

Fastener tape may already be in place from a previous MILES installation. If so, make certain tape is securely fastened to fuselage. If tape is loose or damaged, replace with new tape.

Before starting to mount fastener tape, study all of the steps in this procedure. Before spraying the tape primer be sure you know where to mount the tape. Clean all the areas where tape is to be mounted with water, brush, and rags (Items 4 and 6, Section II, Appendix D). The tape will not stick to dirt and grease.

Position belt so that second detector (22) from front is over third rivet head above horizontal rivet line. Mark a 6-inch long area under detector belt electronics box (23) and another 6-inch long area under third detector (24) from front of belt. Move the belt aside by loosening or disconnecting detector belt from belt end assembly at buckle.



WARNING

Primer is highly inflammable. Do not spray near Heat, Sparks, or Open Flame. No Smoking. Use only in well-ventilated area.

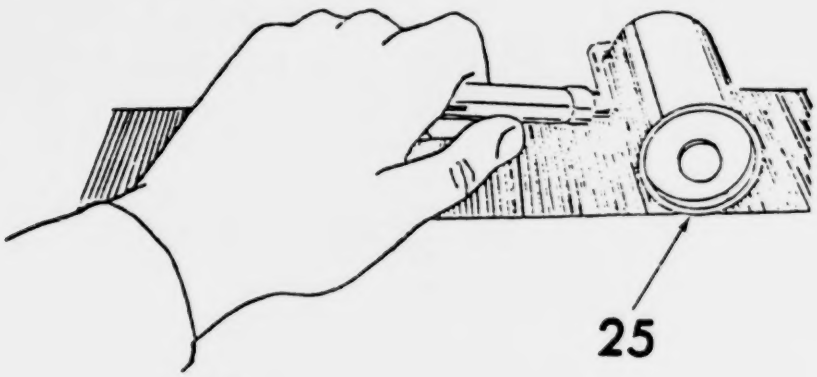
Spray tape primer on marked areas (23, 24). These are locations where tape will be mounted. Wait until the primer is completely dry (tacky) before applying tape.

The tape has a protective paper backing which must be removed before mounting. Retain paper backing.

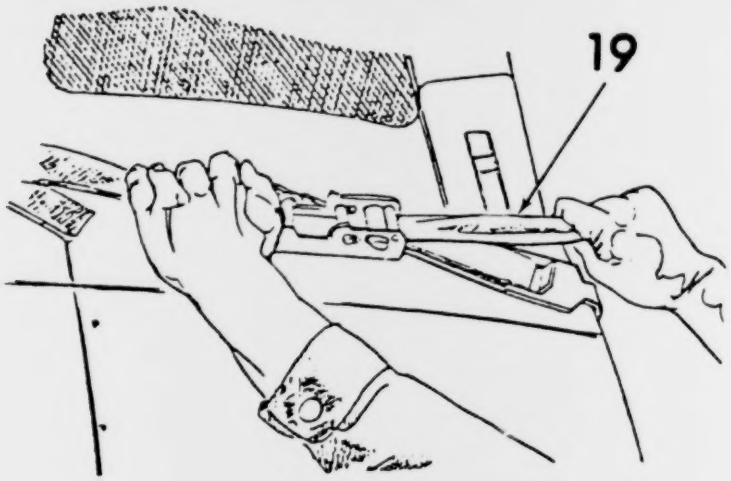
NOTE

Ensure belt is positioned between air scoop and navigation lights before marking.

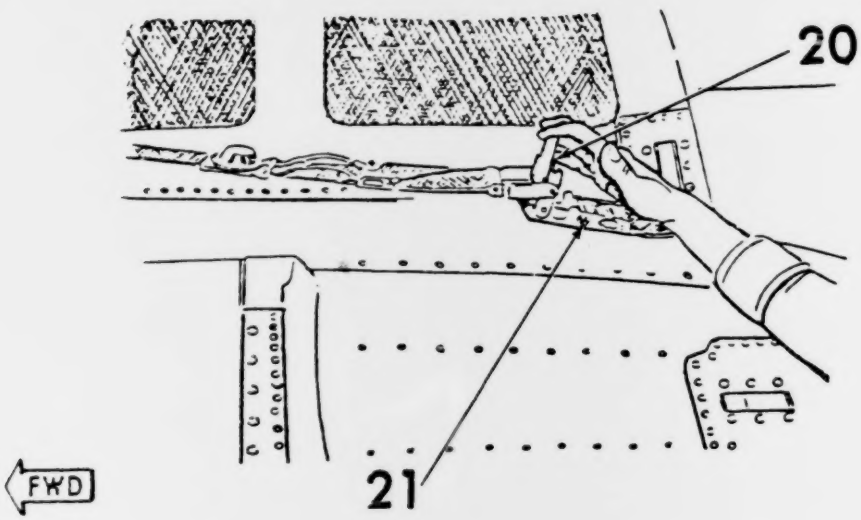
Cut two 6-inch long strips of fastener tape and apply to the primed areas. After you put the tape in place, press it very hard with the hand roller (25) (Item 3, Appendix C).



Outside Installation Task 4: Install Top Left Detector Belt (Cont).



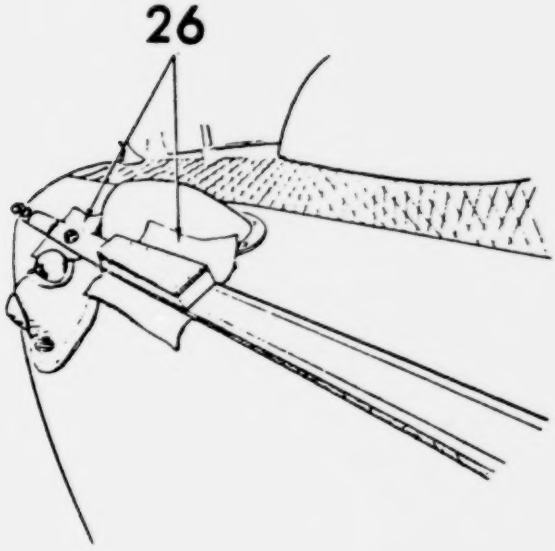
Position buckle (20) at right angle and take out most of slack in detector belt by pulling on loose end of belt (19).

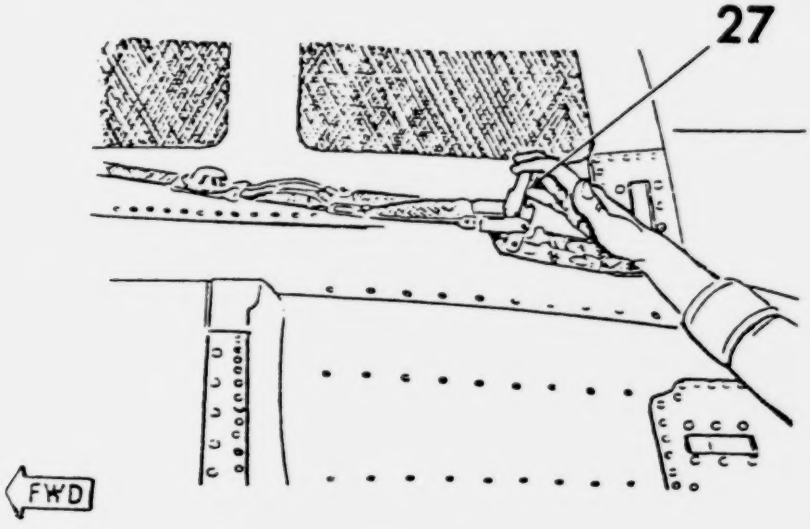


To tighten belt, pull running end (19) of belt. To loosen belt, push belt tension release (21).

Tension is correct when resistance is encountered with buckle at right angle (20) to belt.

Secure paper backing (26) to hook side of both pieces of fastener tape using small pieces of masking tape (Item 7, Section II, Appendix D, or equivalent). This prevents fastener tape from being sheared when detector belt tension is adjusted.

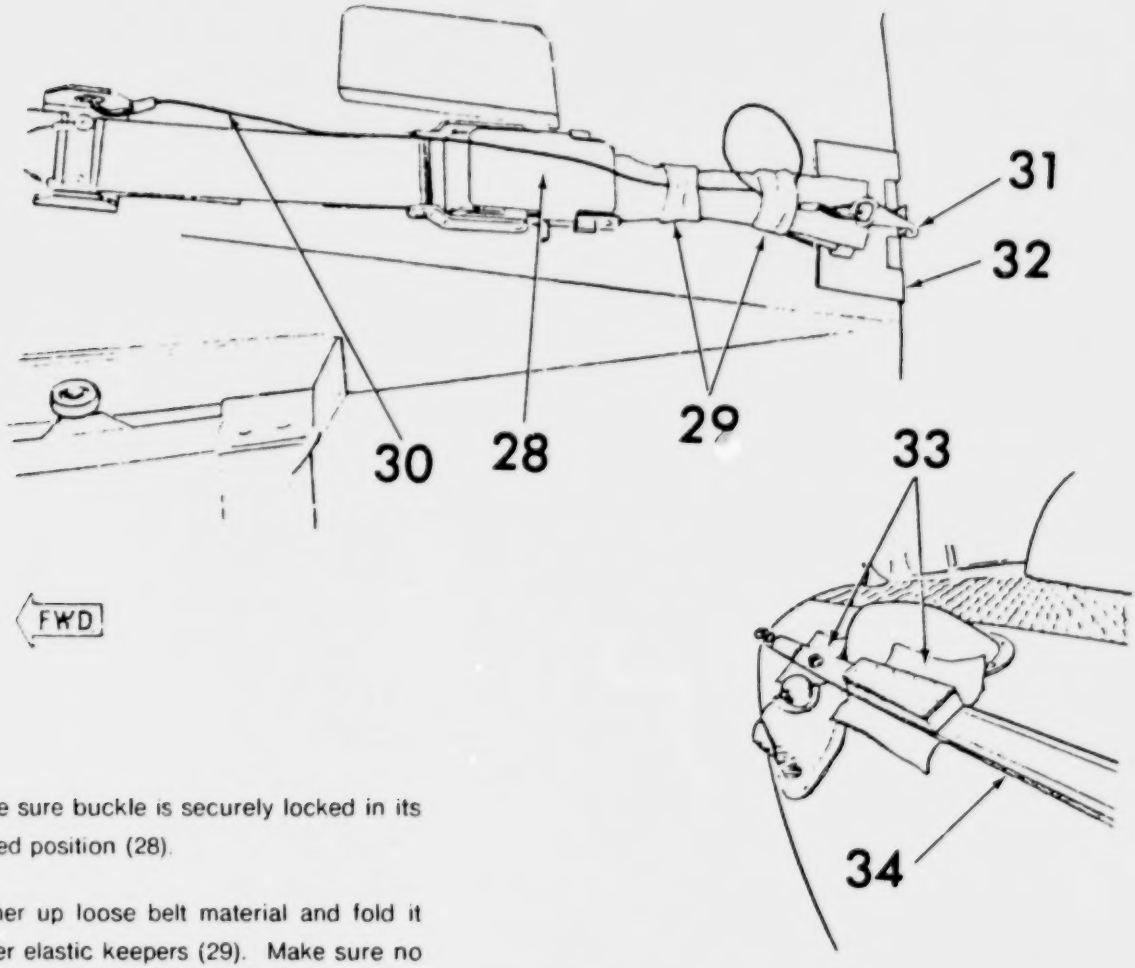




Move detector belt back into position.

Latch buckle (27) and readjust belt as necessary.

Outside Installation Task 4: Install Top Left Detector Belt (Cont).



Make sure buckle is securely locked in its closed position (28).

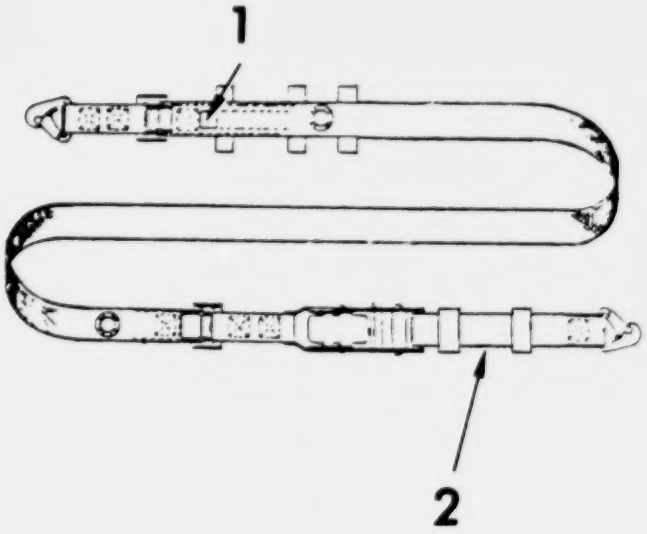
Gather up loose belt material and fold it under elastic keepers (29). Make sure no loose ends are allowed to flap in the wind.

Thread the safety lanyard (30) through the elastic keepers. If necessary, loop lanyard through elastic keepers to remove any slack. Attach lanyard end (31) to belt end clamp (32). A hole in belt end clamp is provided for attaching lanyard.

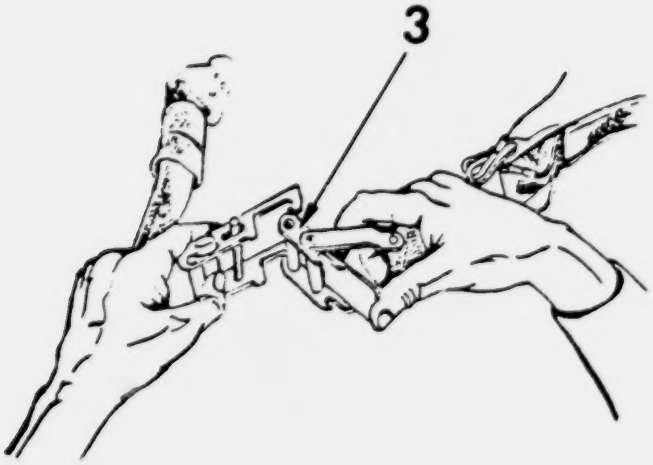
When detector belt is firmly in position, remove paper backing (33) under detector belt and firmly press belt (34) against fastener tape.

Outside Installation Task 5: Install Bottom Left Detector Belt. The bottom left detector belt is installed below the access doors. The belt begins just aft of the copilot's door at the forward fuselage hard point and runs to the rear fuselage hard point.

Locate a detector belt labeled Aircraft Segment No. 2 (1).



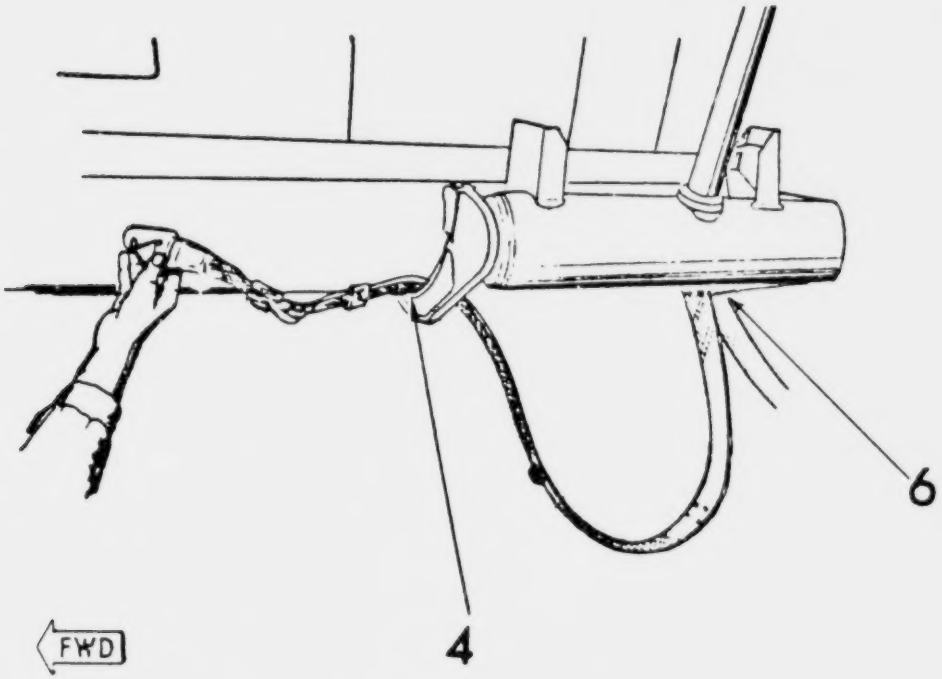
Locate a belt end assembly (2) (there are two). Attach it to detector belt. Close and latch buckle (3).

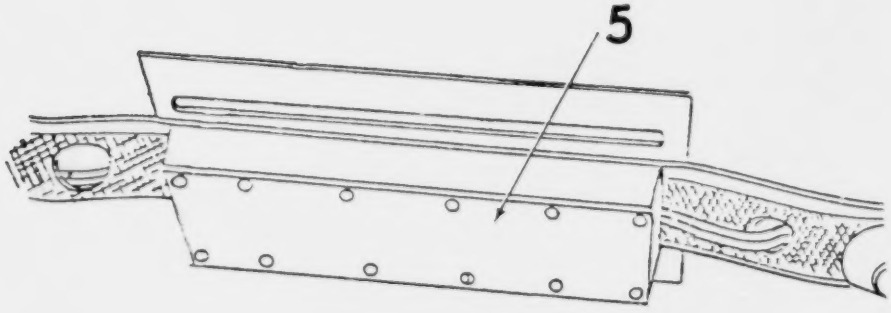


Outside Installation Task 5: Install Bottom Left Detector Belt (Cont).

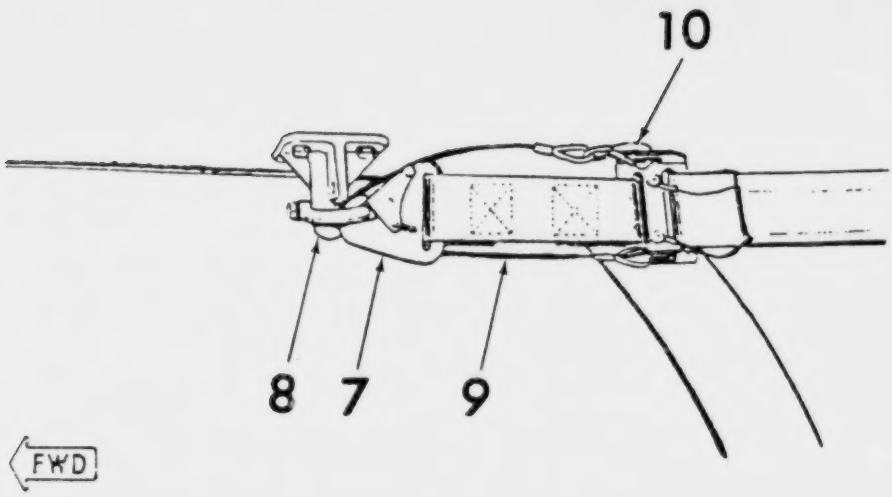
Perform Steps On This Page ONLY If Your Helicoper Is Equipped With a Pintle Mount.

If Not, Equipped With A Pintle, Go Directly to Page 2-27.





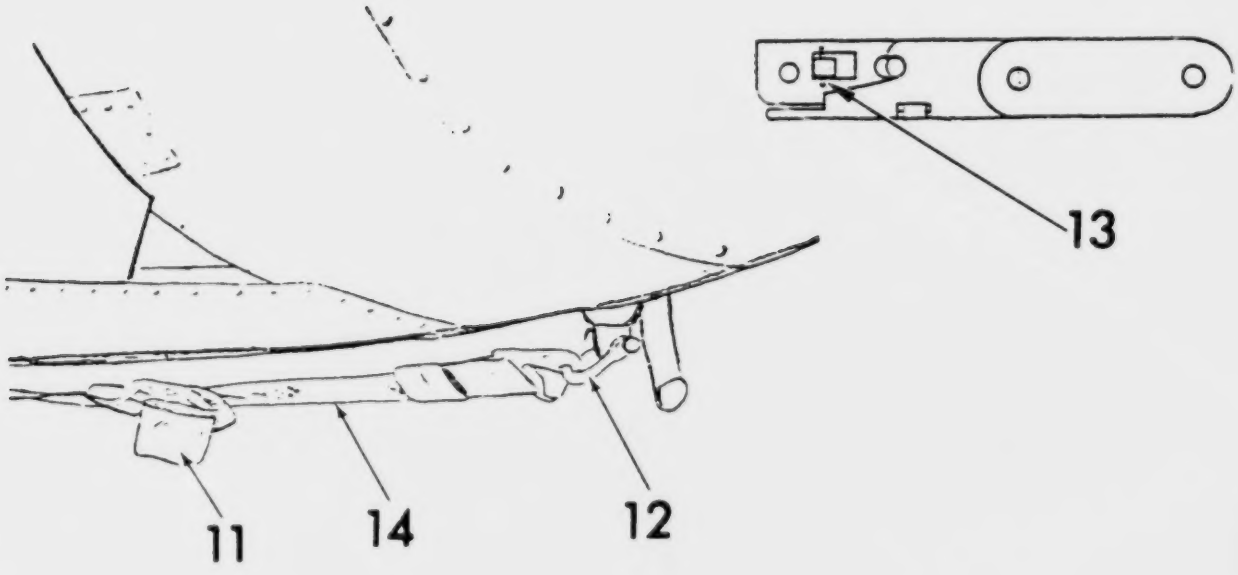
Begin at left side rear pintle mount. Thread left end of belt behind the forward pintle mount (4). When belt is pulled tight, the electronics box (5) will be located behind rear mount. Thread remainder of belt behind aft pintle mount (6) and towards aircraft rear.



Pull belt forward. Attach belt clamp (7) to forward hardpoint clevis (8). Make sure clevis is parallel to ground. Thread safety lanyard (9) through clevis and attach snap hook (10) to opposite side of bracket.

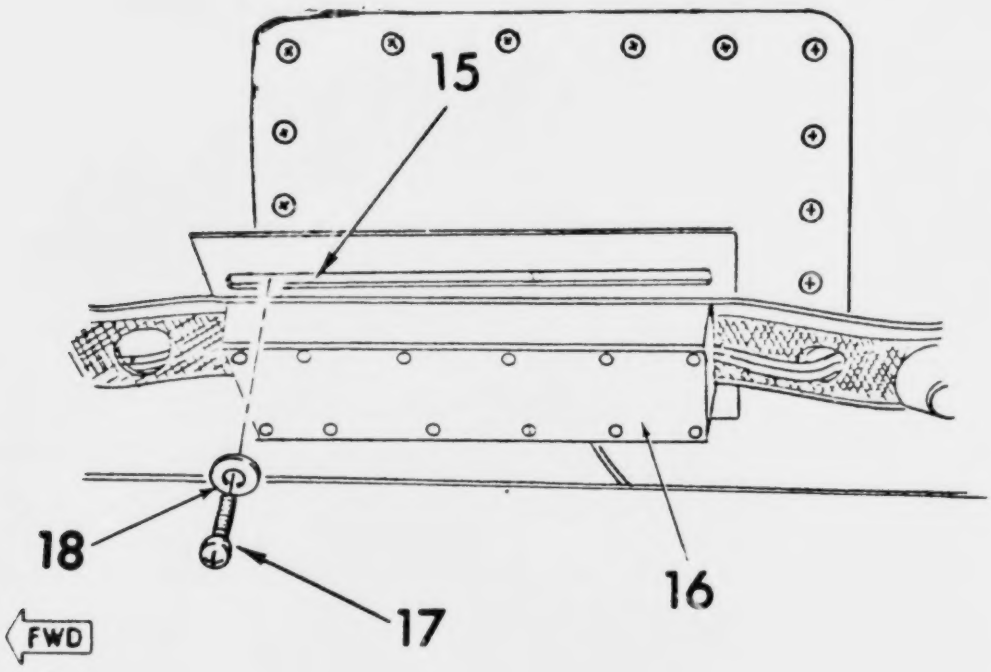
NOTE

If necessary, thread lanyards through clevis twice and take up slack.



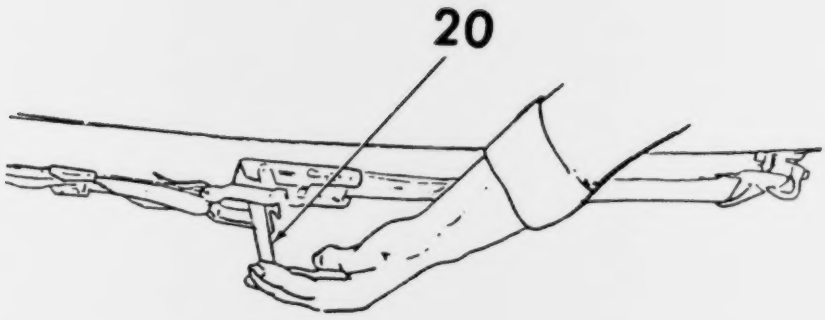
Attach belt end assembly (11) to rear hard point (12). Make sure clevis is parallel with ground. Push belt release (13) and loosen strap (14) if necessary. Do not tighten belt.

Outside Installation Task 5: Install Bottom Left Detector Belt (Cont).



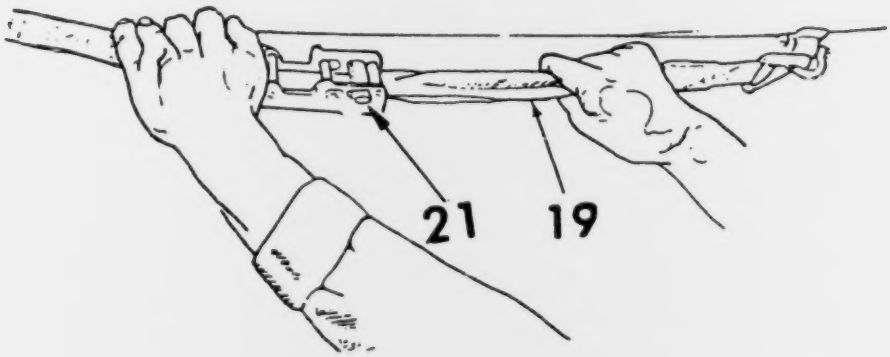
Line up slot (15) in plate attached to electronics box (16) with fourth screw (17) from top of fuselage access plate. Access plate is located toward rear and below cargo door and aft of rear pintle mount if so equipped. Remove screw. Install MILES screw (17) with washer (18) through slot (15) and insert back into its hole. DO NOT TIGHTEN THE SCREW YET.

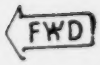
Retain aircraft screw for reinstallation after MILES exercises.



Position buckle (20) at right angle.

Take all slack out of detector belt by pulling on belt end strap .

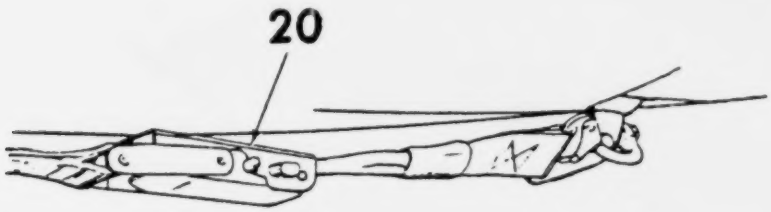




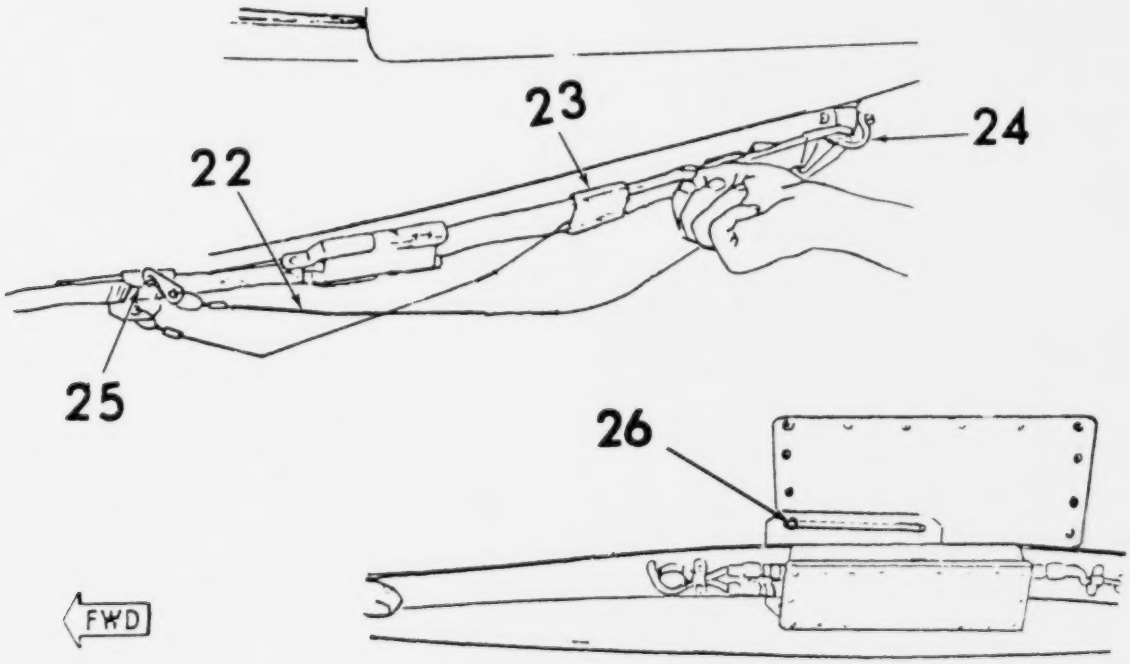
To tighten belt, pull running end (19) of belt. To loosen belt, push belt tension release (21).

Tension is correct when resistance is encountered with buckle at right angle (20) to belt.

Outside Installation Task 5: Install Bottom Left Detector Belt (Cont).



Make sure buckle (20) is securely locked in its closed position.

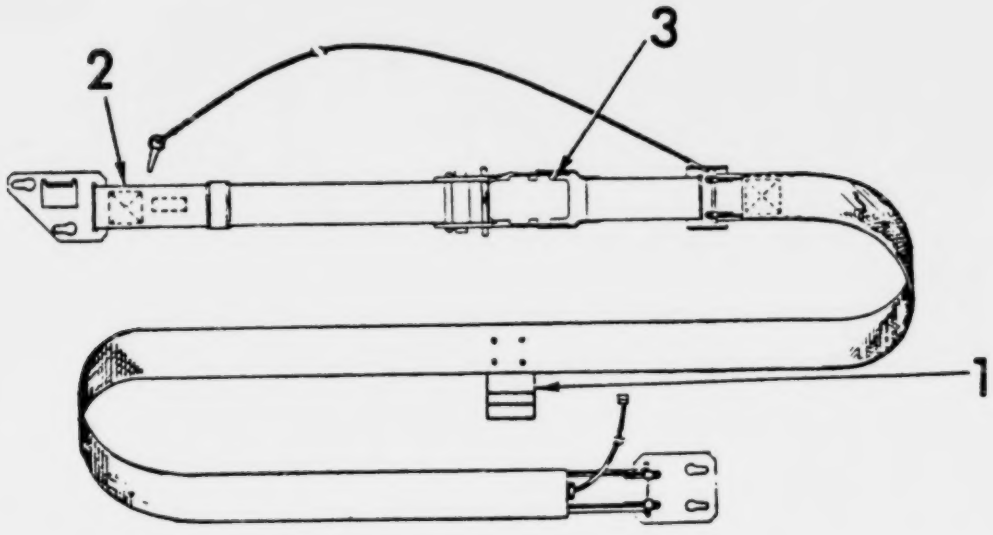


Run safety lanyard (22) through elastic keepers (23). If necessary, loop lanyard through keepers to remove any slack. Route lanyard through rear hard point clevis (24) and back through elastic keepers. Attach lanyard clamp to slot in belt reducer (25).

Gather up loose belt material and fold it under elastic keepers (24). Make sure no loose ends are allowed to flap in the wind.

Securely tighten screw (26) holding detector belt electronics box to fuselage.

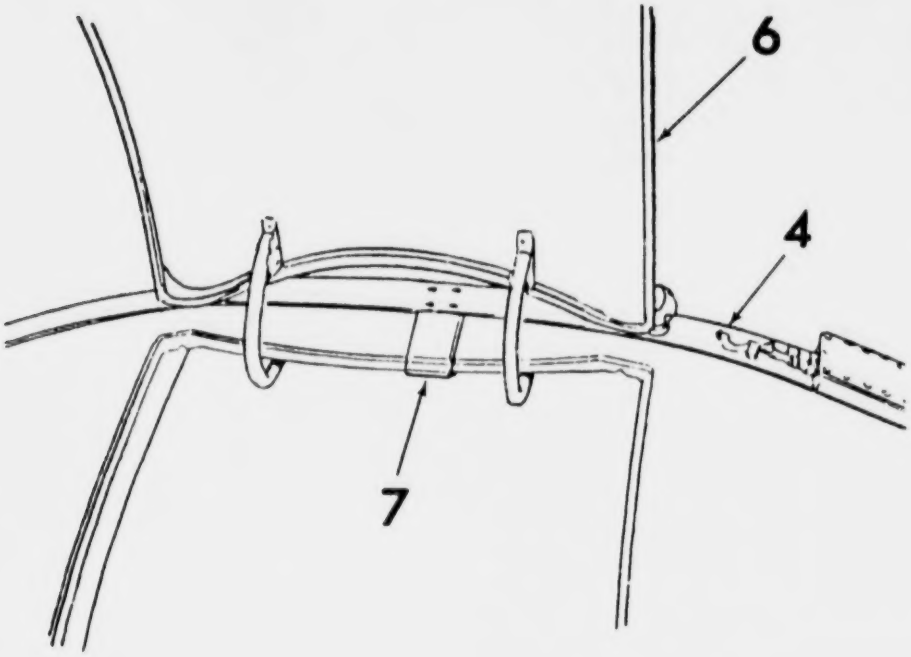
Outside Installation Task 6: Install Front Detector Belt.



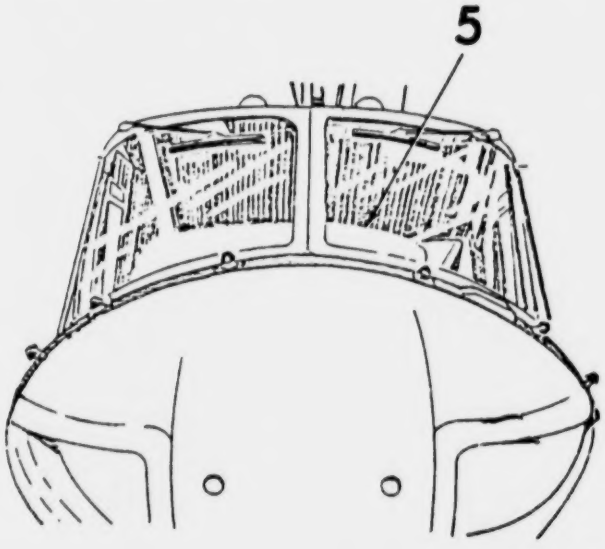
Locate detector belt labeled Aircraft Segment No. 4. Arrange the belt so that the center bracket (1) is pointing toward you.

Locate belt end assembly (2). Attach it to detector belt. Close and latch buckle (3).

Outside Installation Task 6: Install Front Detector Belt (Cont).



Drape front detector belt (4) across helicopter nose just below windshield (5). Open the nose access door (6) and slip the detector belt bracket (7) under the door in approximately the center of the nose. Close the door but do not lock it.

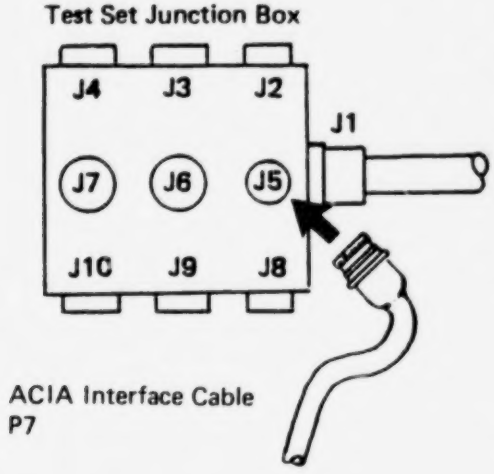


MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

Disconnect UH-1H ACIA INTFC Cable Assembly (W3), connector P7, from AKI/Smoke-ACIA Cable Assembly (W2), connector P2. Connect connector P7 to connector J5 on Test Set Junction Box.



Read voltage on voltmeter.

If voltage reading is 20 to 30 volts, replace defective AKI/Smoke-ACIA Cable Assembly (W2). Return system to service.

If voltage reading is less than 20 volts, check aircraft electrical system.

If aircraft electrical system is inoperative, repair all malfunctions (refer to TM 55-1520-210-10). Return system to service.

If aircraft electrical system has no malfunctions, replace UH-1H ACIA INTFC Cable Assembly (W3). Return system to service.

(1.1) Smoke Assembly Inoperative – Correct Voltage

Place test set switch S7 to G.

Insert Vehicle (Orange) Key into key receptacle on ACIA. Turn key clockwise to WEAPON.

Table 3-4. Troubleshooting - With MSTS (Cont)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

3. SMOKE ASSEMBLY TEST (CONT)

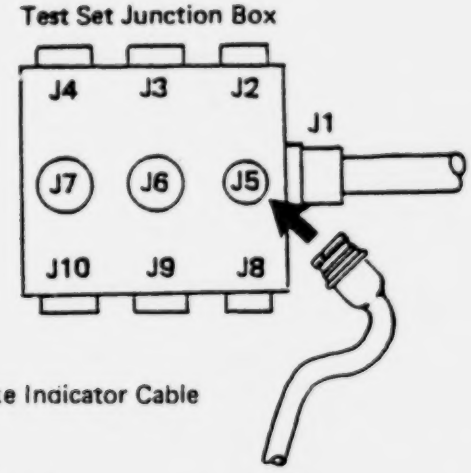
(1.1) Smoke Assembly Inoperative - Correct Voltage (Cont)

Check test set indicator light L3.

If lamp L3 is ON, replace defective Smoke Assembly. Return system to service.

If lamp L3 is not ON, disconnect AKI/Smoke-ACIA Cable Assembly (W2), from Test Set Junction Box. Reconnect to Smoke Assembly.

Disconnect UH-1H ACIA INTFC Cable Assembly (W3), connector P7, from AKI/Smoke-ACIA Cable Assembly (W2), connector P2. Connect connector P7 to connector J5 on Test Set Junction Box.



Check test set indicator light L3.

If light L3 is ON, replace defective AKI/Smoke-ACIA Cable Assembly (W2). Return system to service.

If light L3 is not ON, disconnect UH-1H ACIA INTFC Cable Assembly (W3), from Test Set Junction Box. Reconnect to AKI/Smoke-ACIA Cable Assembly (W2).

Place test set switch S1 to EXT.

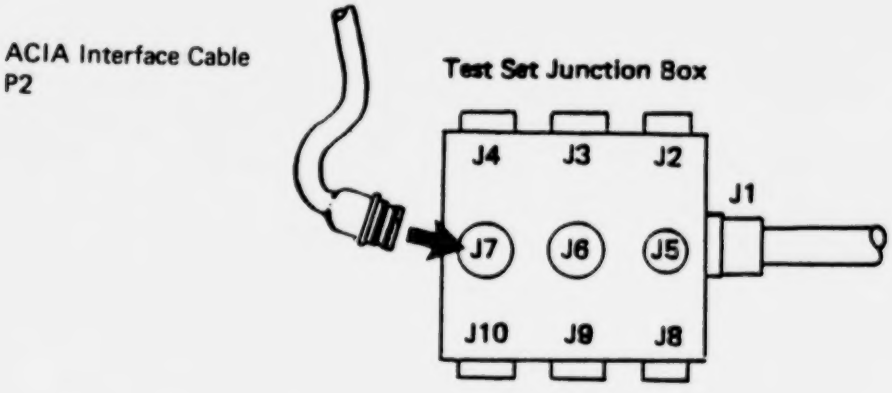
Place test set switch S2 to OFF.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

Disconnect UH-1H ACIA INTFC Cable Assembly (W3), connector P2 from CKI. Connect to Test Set Junction Box, connector J7.



Open up Smoke Indicator housing cover and pull extractor shaft out to its extended position.

Place test set switch S7 to F. Momentarily depress test set switch S5. Check Smoke Assembly.

If Smoke Assembly extractor shaft moves into Smoke Indicator housing, replace defective CKI. Return system to service.

If Smoke Assembly extractor shaft does not move into Smoke Indicator housing, replace UH-1H ACIA INTFC Cable Assembly (W3). Return system to service.

4. AIRCRAFT KILL INDICATOR (AKI) TEST

(1) AKI Inoperative With Correct CKI Lamp Indication

Before proceeding check that:

UH-1H ACIA INTFC Cable Assembly (W3), connector P6, is properly installed.

HEATED BLANKET circuit breakers are ON.

BAT switch is ON.

NON-ESS BUS switch to MANUAL ON if operating on aircraft battery power.

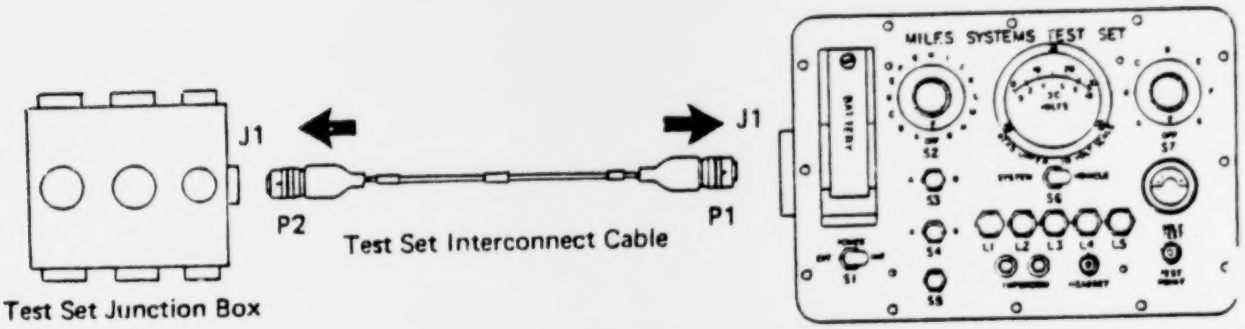
Table 3-4. Troubleshooting - With MSTS (Cont)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

4. AIRCRAFT KILL INDICATOR (AKI) TEST (CONT)

(1) AKI Inoperative With Correct CKI Lamp Indication (Cont)

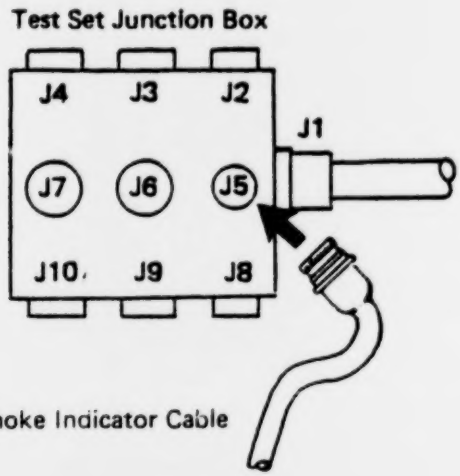
Connect Test Set Interconnect Cable, connector P1, to test set, connector J1. Connect Test Set Interconnect Cable, connector P2, to Test Set Junction Box, connector J1.



Install a 9 V battery in test set battery box.

Place test set switch S1 to INT.

Disconnect AKI/Smoke–ACIA Cable Assembly (W2), connector P3, from AKI Assembly. Connect to Test Set Junction Box, connector J5.



MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

Place test set switch S2 to 0.

Place test set switch S6 to VEHICLE.

Read voltage on voltmeter.

If voltage reading is 20 to 30 volts, proceed to (1.1) AKI Inoperative With Correct CKI Lamp Indication – Correct Voltage.

If voltage reading is less than 20 volts, check aircraft electrical system for proper operation (refer to TM 55-1520-210-10). Correct all malfunctions. Return system to service.

If voltmeter indicates no voltage, disconnect AKI/Smoke–ACIA Cable Assembly (W2), from Test Set Junction Box. Reconnect to AKI Assembly.

Disconnect UH-1H ACIA INTFC Cable Assembly (W3), connector P7, from AKI/Smoke–ACIA Cable Assembly (W2), connector P2. Connect connector P7 to connector J5 on Test Set Junction Box.

Read voltage on voltmeter.

If voltage reading is 20 to 30 volts, replace defective AKI/Smoke-ACIA Cable Assembly (W2). Return system to service.

If voltage reading is less than 20 volts, verify UH-1H electrical system is functional.

If aircraft electrical system is inoperative, repair all malfunctions (refer to TM 55-1520-210-10). Return system to service.

If aircraft electrical system has no malfunctions, replace UH-1H ACIA INTFC Cable Assembly (W3). Return system to service.

(1.1) AKI Inoperative With Correct CKI Lamp Indication – Correct Voltage

Turn test set switch S6 to E.

Insert Vehicle (Orange) Key into key receptacle on ACIA. Turn key clockwise to WEAPON.

Check test set indicator lamp L2.

If lamp L2 flashes ON/OFF, replace defective AKI Assembly. Return system to service.

Table 3-4. Troubleshooting - With MSTS (Cont)

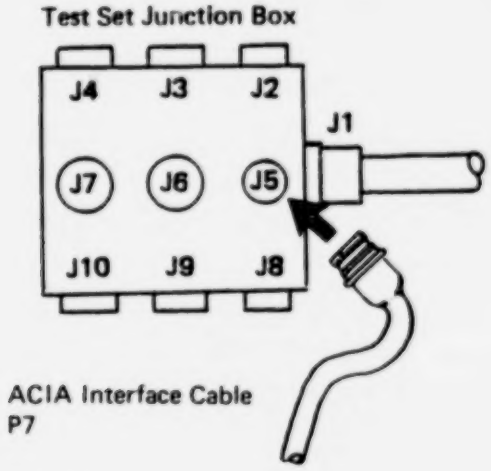
MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

4. AIRCRAFT KILL INDICATOR (AKI) TEST (CONT)

(1.1) AKI Inoperative With Correct CKI Lamp Indication - Correct Voltage (Cont)

If lamp L2 does not flash ON/OFF, disconnect AKI/Smoke-ACIA Cable Assembly (W2), from Test Set Junction Box. Reconnect to AKI assembly.

Disconnect UH-1H ACIA INTFC Cable Assembly (W3), connector P7, from AKI/Smoke-ACIA Cable Assembly (W2), connector P2. Connect P7 to connector J5 on Test Set Junction Box.



Check test set indicator light L2.

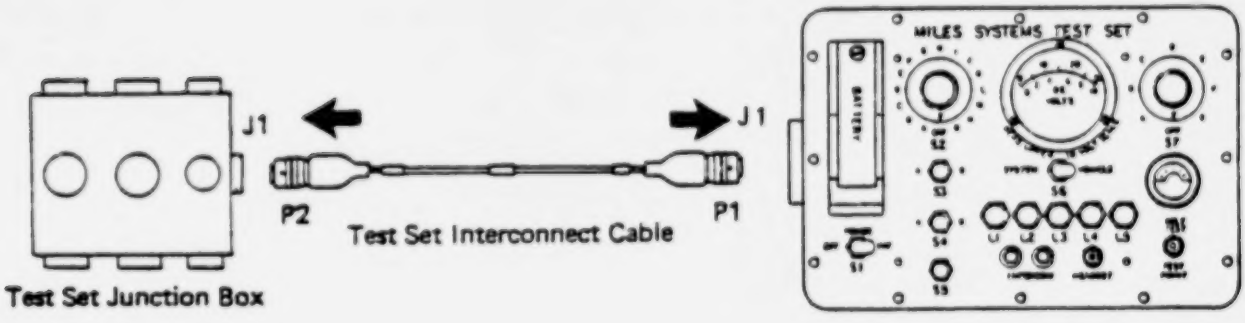
If light L2 flashes ON/OFF, replace defective AKI/Smoke-ACIA Cable Assembly (W2). Return system to service.

If light L2 does not flash ON/OFF, replace defective UH-1H ACIA INTFC Cable Assembly (W3). Return system to service.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION

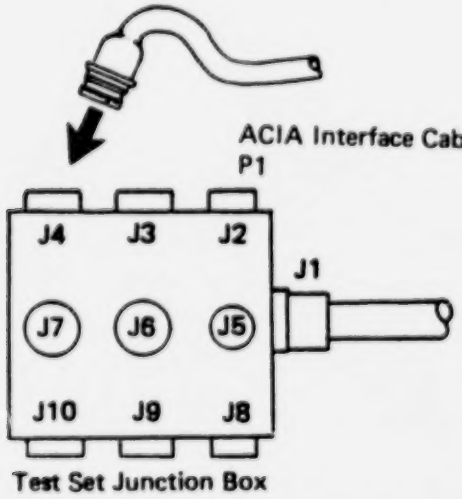
(2) AKI Inoperative With No CKI ENGAGE Lamp Indication

Connect Test Set Interconnect Cable, connector P1, to test set, connector J1. Connect Test Set Interconnect Cable, connector P2, to Test Set Junction Box, connector J1.



Place test set switch S1 to EXT.

Disconnect UH-1H ACIA INTFC Cable Assembly (W3), connector P1 from ACIA. Connect to Test Set Junction Box, connector J4.



MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

4. AIRCRAFT KILL INDICATOR (AKI) TEST (CONT)

(2) AKI Inoperative With No CKI ENGAGE Lamp Indication (Cont)

Place test set switch S7 to G. Momentarily depress and release switch S5. Check AKI.

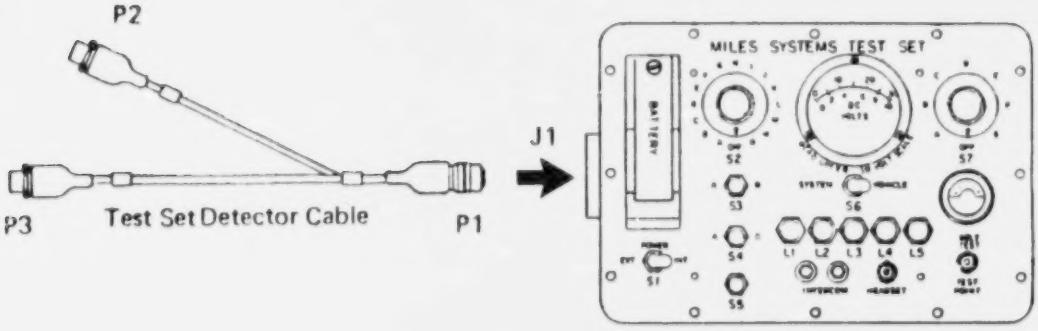
If AKI flashes, replace defective ACIA. Return system to service.

If AKI does not flash, replace UH-1H ACIA INTFC Cable Assembly (W3). Return system to service.

5. AIRCRAFT DETECTOR ASSEMBLIES TEST

(1) Any One Detector Belt Fails

Connect Test Set Detector Cable, connector P1, to test set, connector J1.



MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

Place test set switch S1 to EXT.

Disconnect suspect faulty detector belt.

Connect Test Set Detector Cable, connector P2, to detector belt and connector P3 to Right or Left Side Belt Harness Cable (W4 or W5) previously connected to belt.

Place test set switch S6 to SYSTEM.

Read voltage on voltmeter.

If voltage reading is less than 8.5 volts, replace defective Right or Left Side Belt Harness Cable. Return system to service.

If voltage reading is 8.5 to 13 volts, aim Controller Gun at suspect faulty detector belt. Fire a "NEAR MISS" signal. Check BELT TEST meter.

NOTE

When firing Controller Gun at suspect faulty detector belts, maintain a minimum of 5 feet between Controller Gun and detector belts. At distances less than 5 feet, a FALSE rate reading is possible.

If BELT TEST meter indicates greater than 96, replace defective Right or Left Side Belt Harness Cable. Return system to service.

If BELT TEST meter indicates less than 96, replace faulty detector belt. Return system to service.

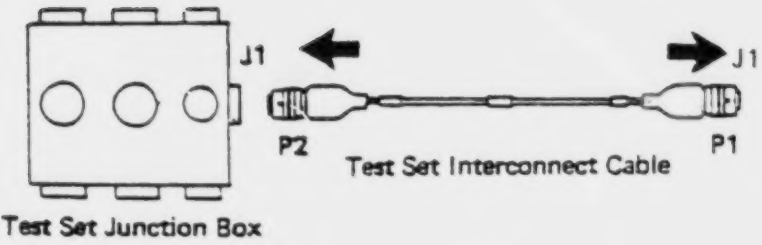
Table 3-4. Troubleshooting - With MSTS (Cont)

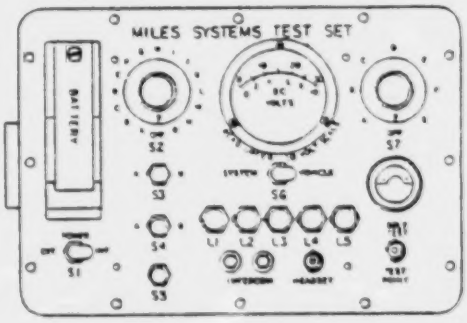
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION

5. AIRCRAFT DETECTOR ASSEMBLIES TEST (CONT)

(2) All Detector Belts Fail

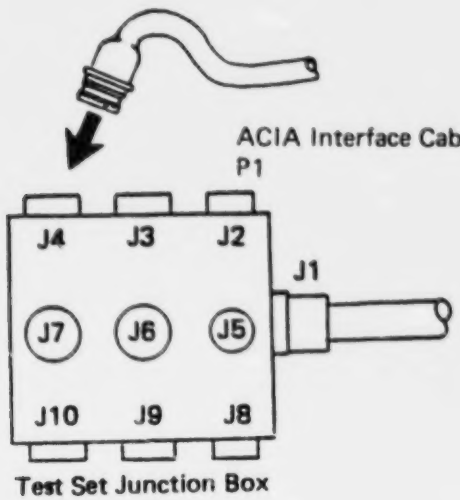
Connect Test Set Interconnect Cable, connector P1, to test set, connector J1. Connect Test Set Interconnect Cable, connector P2, to Test Set Junction Box, connector J1.





Place test set switch S1 to EXT.

Disconnect UH-1H ACIA INTFC Cable Assembly (W3), connector P1 from ACIA. Connect to Test Set Junction Box, connector J4.



MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

Read rate from detector belt on test set BELT TEST meter. See Table below to determine acceptable rate for 5 detector belts.

Detector Belt Rate		
Number of Belts	Full Sun	Shade
1	0 - 10	0 - 2
2	0 - 15	0 - 4
3	0 - 20	0 - 8
4	0 - 30	0 - 10
5	0 - 40	0 - 12

If BELT TEST meter rate is acceptable, go to (2.1) All Detector Belts Fail - Controller Gun Test.

If BELT TEST meter rate is unacceptable, disconnect one aircraft detector belt.

Read detector belt rate on test set BELT TEST meter. See Table 3-5 to determine acceptable rate for 4 detector belts.

If BELT TEST meter rate is acceptable, replace detector belt that was disconnected for test. Return system to service.

If BELT TEST meter rate is unacceptable, reconnect detector belt previously disconnected. Repeat previous tests on remaining aircraft detector belts until faulty belt is isolated.

If all belts are checked and BELT TEST meter rate is still unacceptable, disconnect Belt Harness Right Cable Assembly (W4), connector P1, from UH-1H ACIA INTFC Cable Assembly (W3), connector P5.

Table 3-4. Troubleshooting - With MSTS (Cont)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

5. AIRCRAFT DETECTOR ASSEMBLIES TEST (CONT)

(2) All Detector Belts Fail (Cont)

Read detector belt rate on test set BELT TEST meter. See Table 3-5 to determine acceptable rate for 3 detector belts.

If BELT TEST meter rate is acceptable, replace defective Belt Harness Right Cable Assembly. Return system to service.

If BELT TEST meter rate is not acceptable, reconnect Belt Harness Right Cable Assembly (W4), to UH-1H ACIA INTFC Cable Assembly (W3).

Disconnect Belt Harness Left Cable Assembly (W5), from UH-1H ACIA INTFC Cable Assembly (W3), connector P4.

Read detector belt rate on test set Belt Test meter. See Table 3-5 to determine acceptable rate for 2 detector belts.

If BELT TEST meter rate is acceptable, replace defective Belt Harness Left Cable Assembly. Return system to service.

If BELT TEST meter rate is not acceptable, replace UH-1H ACIA INTFC Cable Assembly (W3). Return system to service.

(2.1) All Detector Belts Fail - Controller Gun Test

Aim Controller Gun at detector belts. Fire a "NEAR MISS" signal. Check test set BELT TEST meter.

NOTE

When firing Controller Gun at faulty detector belts, maintain a minimum of 5 feet between Controller Gun and detector belts. At distances less than 5 feet, a FALSE rate reading is possible.

If BELT TEST meter rate is greater than 96, replace defective ACIA. Return system to service.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

If BELT TEST meter indicates less than 96, disconnect Belt Harness Right Cable Assembly (W4), connector P1, from UH-1H ACIA INTFC Cable Assembly (W3), connector P5.

Aim Controller Gun at Left Side detector belts. Fire a "NEAR MISS" signal. Check test set BELT TEST meter.

If BELT TEST meter indicates less than 96, proceed to (2.2) All Detector Belts Fail – Nose.

If BELT TEST meter indicates greater than 96, reconnect Belt Harness Right Cable Assembly (W4). Disconnect Right Bottom detector belt.

Aim Controller Gun at Left Side detector belts. Fire a "NEAR MISS" signal. Check test set BELT TEST meter.

If BELT TEST meter indicates greater than 96, replace defective Right Bottom detector belt. Return system to service.

If BELT TEST meter indicates less than 96, disconnect Right Top detector belt.

Aim Controller Gun at Left Side detector belts. Fire a "NEAR MISS" signal. Check test set BELT TEST meter.

If BELT TEST meter indicates greater than 96, replace defective Right Top detector belt. Return system to service.

If BELT TEST meter indicates less than 96, replace defective Belt Harness Right Cable Assembly (W4). Return system to service.

Table 3-4. Troubleshooting – With MSTS (Cont)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

5. AIRCRAFT DETECTOR ASSEMBLIES TEST (CONT)

(2.2) All Detector Belts Fail – Controller Gun Test – Nose

Reconnect Belt Harness Right Cable Assembly (W4). Disconnect Belt Harness Left Cable Assembly (W5), connector P1, from UH-1H ACIA INTFC Cable Assembly (W3), connector P4.

Aim Controller Gun at Right Side detector belts. Fire a "NEAR MISS" signal. Check test set BELT TEST meter.

If BELT TEST meter indicates less than 96, replace defective UH-1H ACIA INTFC Cable Assembly (W3). Return system to service.

If BELT TEST meter indicates greater than 96, reconnect P1 to P4. Disconnect nose detector belt.

Aim Controller Gun at Right Side detector belts. Fire a "NEAR MISS" signal. Check test set BELT TEST meter.

If BELT TEST meter indicates greater than 96, replace defective nose detector belt. Return system to service.

If BELT TEST meter indicates less than 96, reconnect nose detector belt. Disconnect Left Top detector belt.

Aim Controller Gun at Right Side detector belts. Fire a "NEAR MISS" signal. Check test set BELT TEST meter.

If BELT TEST meter indicates greater than 96, replace defective Left Top detector belt. Return system to service.

If BELT TEST meter indicates less than 96, reconnect Left Top detector belt. Disconnect Left Bottom detector belt.

Aim Controller Gun at Right Side detector belts. Fire a "NEAR MISS" signal. Check test set BELT TEST meter.

If BELT TEST meter indicates greater than 96, replace defective Left Bottom detector belt. Return system to service.

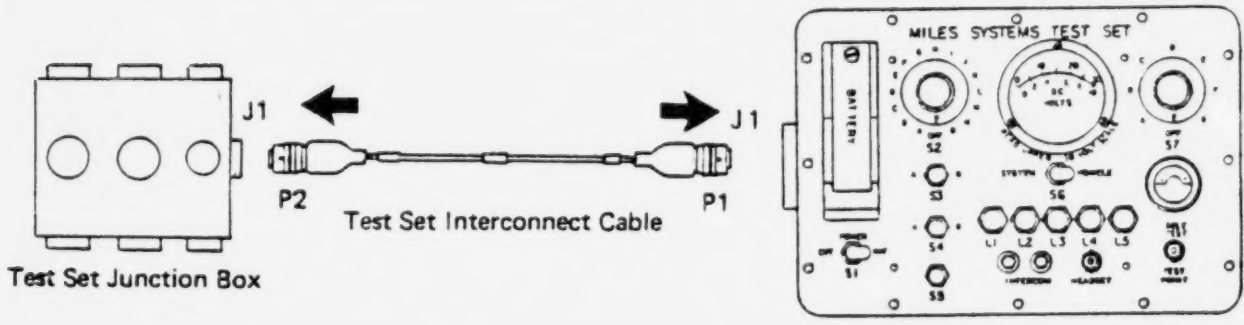
If BELT TEST meter indicates less than 96, replace defective Left Side Belt Harness Left Cable Assembly (W5). Return system to service.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION

6. HEADSET TEST

(1) Headsets Faulty

Connect Test Set Interconnect Cable, connector P1, to test set, connector J1. Connect Test Set Interconnect Cable, connector P2, to Test Set Junction Box, connector J1.



Place test set switch S1 to EXT.

Disconnect UH-1H ACIA INTFC Cable Assembly (W3), connector P2 from CKI. Connect to Test Set Junction Box, connector J7.

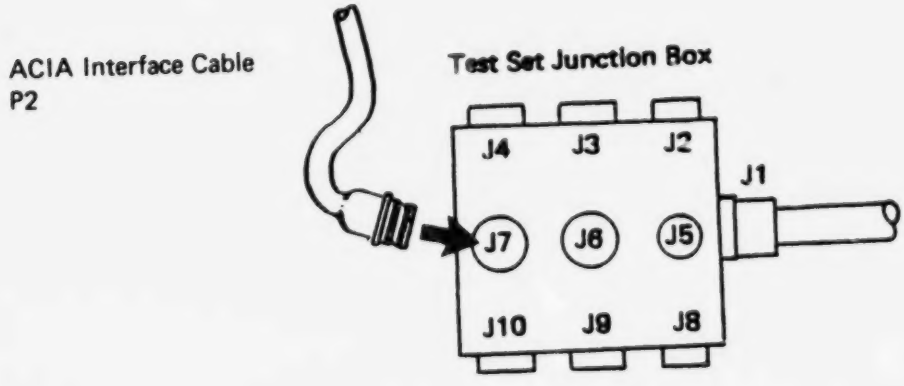


Table 3-4. Troubleshooting - With MSTS (Cont)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION

6. HEADSET TEST (CONT)

(1) Headsets Faulty (Cont)

Place test set switch S2 to 0. (Note that test set indicator lights L2 and L4 may come ON. These indications have no effect on troubleshooting procedures.)

Insert Controller Key into key receptacle on ACIA. Turn key counterclockwise to CONTROLLER. Turn back and remove key.

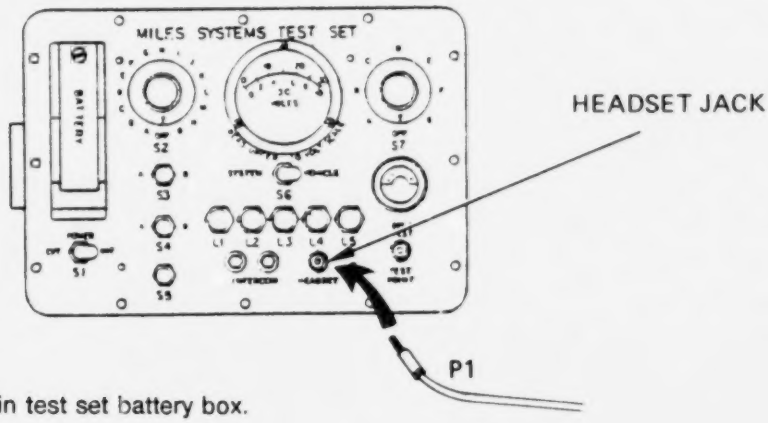
Place test set switch S7 to A.

Insert Vehicle (Orange) Key into key receptacle on ACIA. Turn clockwise to "SELF KILL" system. Turn back and remove key.

Check test set BELT TEST meter.

If BELT TEST meter indicates less than 50, proceed to (1.1) Headset Faulty - Audio Tone.

If BELT TEST meter indicates greater than 50, disconnect UH-1H ACIA INTFC Cable Assembly (W3), from Test Set Junction Box. Reconnect to CKI. Disconnect Headset-CKI Cable Assembly in question from CKI. Connect cable assembly to test set connector labeled HEADSET.



Install a 9 V battery in test set battery box.

Set test set switch S1 to INT.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

Place test set switch S7 to B. Depress switch S5. Listen through headset in question.

If AUDIO TONE is present, replace defective CKI. Return system to service.

If AUDIO TONE is not present, verify aircraft headset is operational.

If aircraft headset is not operational, repair all malfunctions (refer to TM 55-1520-210-10). Return system to service.

If aircraft headset is operational, replace defective Headset-CKI Cable Assembly. Return system to service.

(1.1) Headset Faulty – Audio Tone

Disconnect UH-1H ACIA INTFC Cable Assembly (W3), from Test Set Junction Box. Reconnect to CKI. Ensure Headset-CKI Cable Assembly in question is connected to CKI.

Disconnect UH-1H ACIA INTFC Cable Assembly (W3), connector P1 from ACIA. Connect to Test Set Junction Box, connector J4.

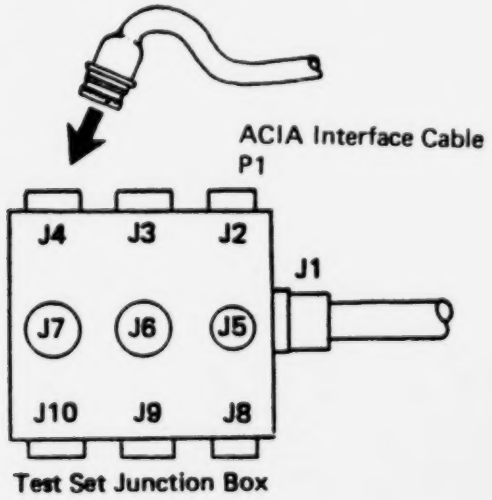


Table 3-4. Troubleshooting - With MSTS (Cont)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION	
6. HEADSET TEST (CONT)	
(1.1) Headset Faulty - Audio Tone (Cont)	
Place test set switch S7 to B. Depress test set switch S5. Listen through aircraft headset.	
	If AUDIO TONE is present, replace defective ACIA. Return system to service.
	If AUDIO TONE is not present, replace defective UH-1H ACIA INTFC Cable Assembly. Return system to service.

CHAPTER 4

AMMUNITION

SECTION I. AUTHORIZED AMMUNITION

AR 101029A

WARNINGS

Never carry hand grenades or handle them by safety pull ring attached to safety pin.

Handle grenade canisters with care at all times.

Expended canisters may be initially hot to touch. Wait 5 minutes after being fired before attempting to remove.

Dispose of malfunctioning and expended grenade canisters in accordance with EOD procedures.

The M18 Smoke Hand Grenades (Yellow) (NSN 1330-00-289-6854) are the only grenade canisters authorized to be fired during MILES training simulations on helicopters.

APPENDIX A

REFERENCES

A-1. SCOPE

This appendix lists all Forms, Field Manuals, Technical Manuals and miscellaneous publications referenced in this manual.

A-2. FORMS

SF 368	Quality Deficiency Report
DA Form 2028-2	Recommended Changes to DA Publications
DA Form 2062	Hand Receipt
DA Form 2402	Exchange Tag
DA Form 2404	Equipment Inspection and Maintenance Work Sheet

A-3. FIELD MANUALS

FM 21-11	Field Manual: First Aid for Soldiers

A-4. TECHNICAL MANUALS

TM 9-1270-224-10-HR	Hand Receipt for Simulator System, Firing, Laser: UH-1H Helicopter
TM 9-1265-370-10-2	Operator's Manual for Simulator System, Firing, Laser: for M60 Machine Gun
TM 55-1520-210-10	Operator's Manual for Army Models UH-1D/H and EH-1H Helicopters
TM 9-1005-224-10	Operator's Manual: M60 Machine Gun

A-5. MISCELLANEOUS PUBLICATIONS

AR 310-2	Identification and Distribution of DA Publications
SB 11-6	Dry Battery Supply Data
DA PAM 738-750	The Army Maintenance Management System (TAMMS)

APPENDIX B

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

SECTION I. INTRODUCTION

B-1. SCOPE

This appendix lists Components Of End Item (COEI) and Basic Issue Items (BII) for the MILES UH-1H helicopter system to help you inventory items required for safe and efficient operation.

B-2. GENERAL

The Components of End Item and Basic Issue Items Lists are divided into the following sections:

a. Section II. Components of End Item. This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

b. Section III. Basic Issue Items. These are the minimum essential items required to place the MILES UH-1H helicopter system in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the MILES UH-1H helicopter system during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII, based on TOE/MTOE authorization of the end item.

B-3. EXPLANATION OF COLUMNS

The following provides an explanation of columns found in the tabular listings:

a. Column (1) – Illustration Number. This column indicates the number of the illustration in which the item is shown.

b. Column (2) – National Stock Number. Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

NOTE

National stock numbers (NSNs) have not been assigned to all COEI, BII, and AAL items because these items are presently supported by contractor logistics support (CLS). When decision is made to assume Government support, NSNs will be assigned, and hand receipt entries (columns a, c, d, and e) will be furnished.

c. Column (3) – Description. Indicates the Federal item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number.

d. Column (4) – Unit of Measure (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr).

e. Column (5) – Quantity required (Qty rqr). Indicates the quantity of the item authorized to be used with/on the equipment.

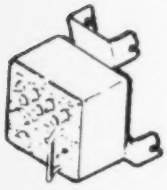
SECTION II. COMPONENTS OF END ITEM

Illustration Number	National Stock Number	Description FSCM and Part Number	U/M	Qty rqr
1	*	Adapter Assembly, Cockpit Kill Indicator (19200) 9339399-2	EA	1
2	*	Adapter Assembly, Simulator System, Laser: Console (19200) 9339392	EA	1
3	*	Adapter Set, Simulator System, Laser: UH-1H Helicopter (19200) 9339548	EA	1
	Line Item/Part Number 9339548 consists of the following components:			
3A	*	Belt End Assembly (19200) 9340083	EA	2
3B	*	Belt End Assembly (19200) 9340084	EA	1
3C	*	Belt End Assembly (19200) 9340103	EA	2
3D	*	Screw, Pan HD, # 10-32 UNC-2A X .5 LG	EA	4
3E	*	Cable Assembly, AKI/Smoke – ACIA (19200) 9340051-2	EA	1
3F	*	Cable Assembly, Belt Harness, Left (19200) 9340054	EA	1

*Not Available on Publication Date

COMPONENTS OF END ITEM

1



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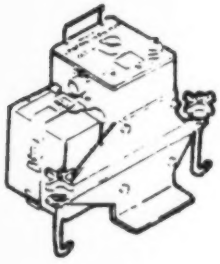

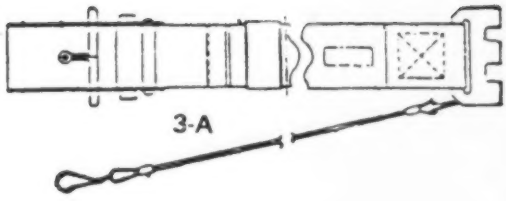

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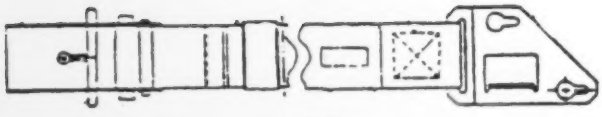

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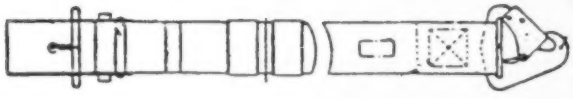
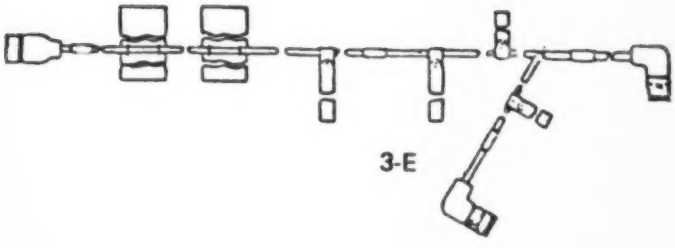
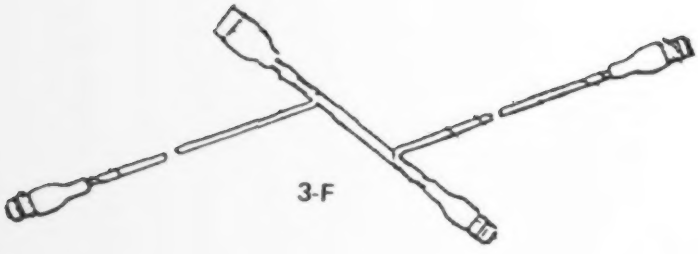


3-C

3-D



3-E



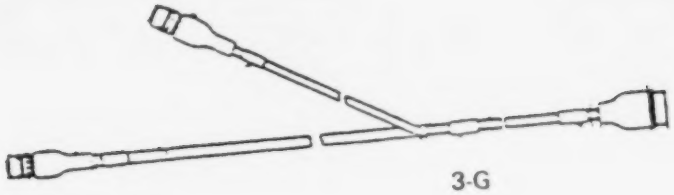
3-F

SECTION II. COMPONENTS OF END ITEM (CONT)

(1) Illustration Number	(2) National Stock Number	(3) Description FSCM & Part Number Usable On Code	U/M	Qty rqr
3G	*	Cable Assembly, Belt Harness, Right (19200) 9340052	EA	1
3H	*	Cable Assembly, Headset – CKI (19200) 9340056-1	EA	2
3I	*	Cable Assembly, UH-1H ACIA INTFC (19200) 9340055	EA	1
3J	5340-01-148-3722	Clamp, Loop (96906) MS 21919-WCG6	EA	10
3K	5305-00-059-3661	Screw, Pan Head #10-32 UNF-2A x .75 long, (96906) MS 51958-65	EA	8
3L	*	Washer, Flat, .219 ID	EA	4
4	*	Detector Belt Assembly, Aircraft Segment No. 2 (19200) 9339539	EA	2
5	*	Detector Belt Assembly, Aircraft Segment No. 3 (19200) 9339540	EA	2
6	*	Detector Belt Assembly, Aircraft Segment No. 4 (19200) 9339541	EA	1
7	*	Indicator Assembly, Simulator System, Laser: Kill, Hit, Miss (19200) 9339396	EA	1
8	*	Installation Kit , UH-1H (19200) 9339416	EA	1
9	*	Operator's Manual, TM 9-1270-224-10	EA	1
10	*	Transit Case Assembly, UH-1H (19200) 9339561	EA	1

*Not Available on Publication Date

COMPONENTS OF END ITEM (CONT)



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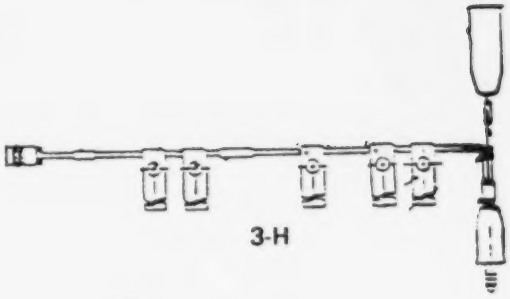

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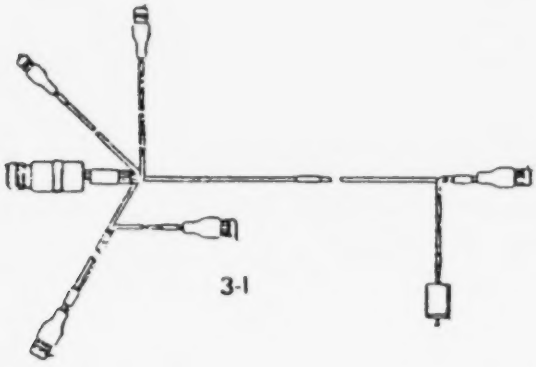


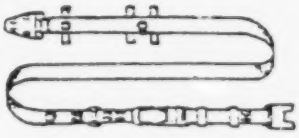
3-I

3-J

3-K

3-L

4



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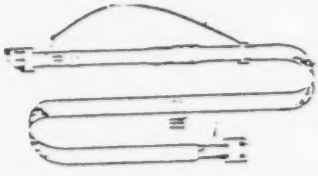

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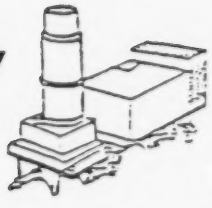

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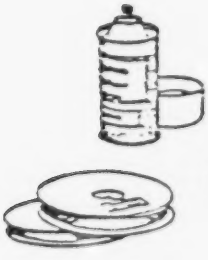

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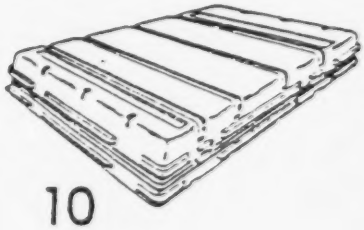

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APPENDIX C

ADDITIONAL AUTHORIZATION LIST

SECTION I. INTRODUCTION

C-1. SCOPE

This appendix lists additional items you are authorized for the support of the MILES UH-1H System.

C-2. GENERAL

This list identifies items that do not have tc accompany the MILES UH-1H System and that do not have to be turned in with it. These items are all authorized to you by either CTA, MTOE, TDA, or JTA.

C-3. EXPLANATION OF LISTING

National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name.

SECTION II. ADDITIONAL AUTHORIZATION LIST

(1) Item Number	(2) National Stock Number	(3) Description FSCM & Part Number Usable On Code	(4) U/M	(5) Qty Auth
1	1265-01-092-0891	Controller's Gun, Simulator System, Laser (19200) 11748811	EA	1
2	*	MILES System Test Set (19200) 9358670	EA	1
3	5120-00-243-9401	Roller, Hand (24617) 6523520	EA	1

* Not Available on Publication Date

APPENDIX D

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

SECTION I. INTRODUCTION

D-1. SCOPE

This appendix lists expendable supplies and materials you will need to operate and maintain the MILES UH-1H system. This listing is for informational purposes only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (except Medical, Class V, Repair Parts, and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

D-2. EXPLANATION OF COLUMNS

a. Column (1) – Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material.

b. Column (2) – Level. This column identifies the lowest level of maintenance that requires the listed item.

C - Operator/Crew

c. Column (3) – National Stock Number (NSN). This is the National Stock Number assigned to the item; use it to request or requisition the item.

d. Column (4) – Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses followed by the part number.

e. Column (5) – Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

SECTION II. EXPENDABLE/DURABLE SUPPLIES AND MATERIAL LIST

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description FSCM & Part Number Usable On Code	(5) U/M
1	C, O	6135-00-050-3280	* Battery, 6 V (80058) BA 200U	EA
2	C, O	7920-00-255-7536	Brush, Cleaning	EA
3	C, O	1330-00-289-6854	Grenade, Hand, Smoke, M18 (Yellow)	EA
4	C, O	6640-00-240-5851	Paper, Lens Cleaning (81349) NNN-P-40	PK
5	C, O	8010-01-040-0947	Primer, Tape (19200) 11749034	OZ
6	C, O	7920-00-205-1711	Rag, Wiping: Cot DDD-R-30, CL 12, GR B	LB
7	C, O	8315-01-111-7170	Tape, Fastener (19200) 11749428	YD
8	C, O	7510-00-266-6694	Tape, Masking, 3" wide (or equivalent) (81348) PPP-T-42	YD

* Dry battery listed is used with the equipment. It will not be preshipped automatically but is to be requisitioned in quantities necessary for the particular organization in accordance with SB 11-6.

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PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE (MILES)
TM 9-1270-224-10	1 February 1984	Simulator System, Firing, Laser: M79 for UH-IH

BE EXACT. PIN-POINT WHERE IT IS

PAGE NO.	PARAGRAPH	FIGURE NO.	TABLE NO.
8	5		
12	1		
12	7		
14	4		

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

Line 5. Change spelling of word unitl to read until

Change the word harnesses to read harness

Change to read: Ask controller to insert his green key into the key receptacle and turn off alarm.

Delete the word it from sentence

SAMPLE

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER
JOHN SMITH SP/3 XXX-XXXX

SIGN HERE
John Smith

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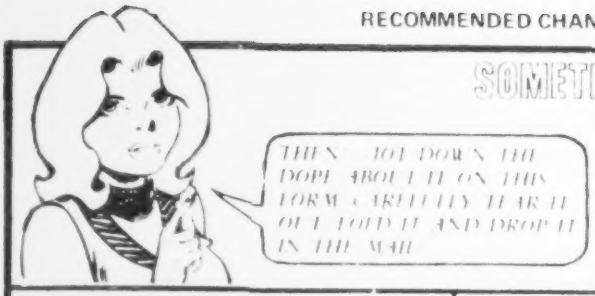

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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
1 Kilogram = 1000 Grams = 2.2 Lb
1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches
1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet
1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

CUBIC MEASURE

1 Cu Centimeter = 1000 Cu Millimeters = 0.06 Cu Inches
1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

TEMPERATURE

$5/9\ (^{0}F - 32) = {}^{0}C$
212° Fahrenheit is equivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
$9/5\ C^{0} + 32 = F^{0}$

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621

TA089991